Residential and Business Center Goesting

Redevelopment of an abandoned high-rise building in the 13th district of Graz

DIPLOMARBEIT

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Fig. 1: Wiener Straße 205 and 207

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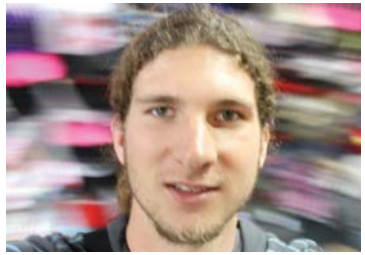

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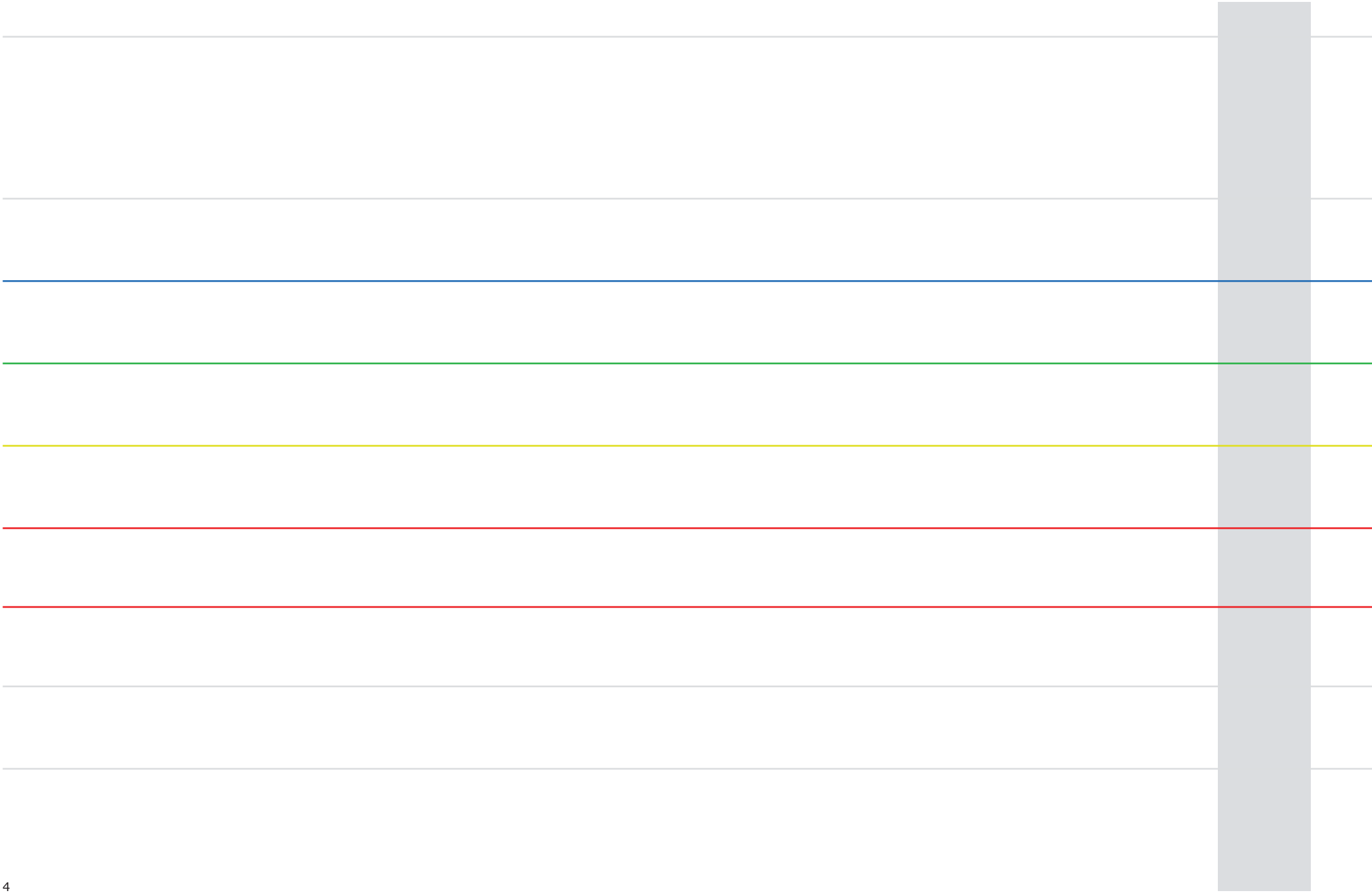

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Preface

The topic of this diploma thesis concentrates on an existing building located in *Graz-Goesting*, *Wiener Straße* 205 to 207. This particular edifice is abandoned and unused for several years now. It was formerly owned by the shoe distributing company *Stiefelkönig* and was used as the second branch office of the firm in *Graz*. In the mid-90's the company moved to another district and therefore this high-rise office building was closed. Abandoned for over a decade, it became a very distinctive and well-known construction in the 13th district. It's location in the center of *Goesting* adjacent to a highly frequented thoroughfare makes it very visible. The representative site of the object as well as the possibility to see it from afar causes it to be an unmistakable and familiar building. It is one of the highest constructions in the area and towers above all of its neighboring buildings, therefore providing a wide view to *St Veit*, *Andritz* and even the *Grazer Uhrturm*.

I am from *Goesting* and lived there for all my life. Thus I am very familiar with the district and the building with its surroundings. In all those years I have seen the high-rise multiple times and since its closing nothing appeared to have changed. Due to its abandonment, the former office and storage building slowly deteriorates gradually. Marked from the years this unused industrial facility and its close surroundings became desolate increasingly. The paved parking lot in the backyard is literally being reconquered by nature.

The main goal of this diploma thesis is to get rid of this current nuisance and to upgrade the site and its surrounding area. This will be accomplished by a revitalization or redevelopment of the existing building. The first step of this process includes several feasibility studies that investigate the sustainability of different prospective uses for the construction. A detailed analysis of the current situation reveals possible functions for the high-rise. Furthermore, a close examination of the district and the surroundings of the site set the basis for the new design.

Adjacent to the property exists a triangular allotment, which is currently used as a parking lot, and a small service building of the electric supply company of *Goesting*, who has its head office within spitting distance. In 2006, this not built-up allotment was annexed to the site of the high-rise and is therefore an integrated part of the conceptual design. A bus station of the GVB (*Grazer Verkehrsbetriebe*), which is affiliated to the plot, enables a good connection to the town center of the city. The advantageous infrastructure of this neighborhood manifests itself with several other utility services as well (grocery stores like *Merkur*, *Lidl*, *Billa*, restaurants, pharmacy, post-office, taxi stand, industry,…) which are all easily reachable (see *Analysis of the Surroundings*). Due to the profitable and beneficial location of the existing building, this diploma thesis develops a design for the site which will contain condominiums or apartments and a hotel. To act against

Preface

Why the topic is feasible

Fig. 2: Land Utilization Plan

The proximate surroundings of the site include core areas with commercial centers (red), pure residential areas (orange), and mixed areas with industry (violet).

Fig. 3: Plot in the FLAEWI

The plot of the high-rise is adjacent to pure residential areas on the calmer backside, which are located on a slight slope and thus conceal the loud trains. The busier commercial area is on the front side of the building next to the *Wiener Straße*.

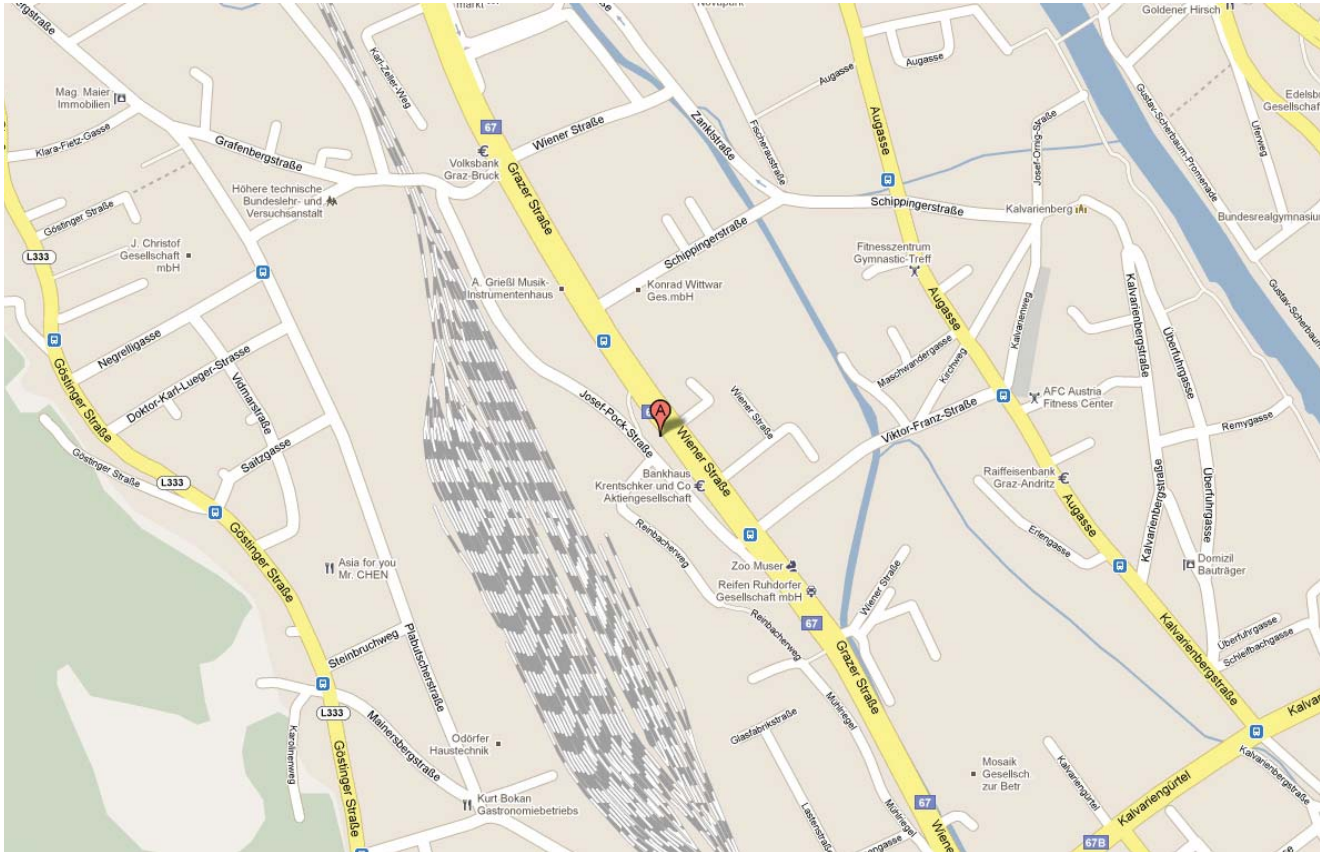


Fig. 4: Map of the site - Location in the city

the desolation of the high-rise and the associated drawback of its surroundings, and to thereby enhance the whole area, an architectural intervention into the existing construction will be necessary and reasonable. One half of the spacious property is covered by the building, the other half of the house on the moderately silent back-side was originally used as a parking lot for the employees of the company. This space could be transformed into a green backyard for the future residents and hotel guests.

The future residential and business center is confronted with the difficult task to fit into the current environment and to create attractive apartments and hotel rooms. The site is situated in a very convenient spot in the district for hotel and office space, but also for apartments. According to the land utilization plan

Fig. 5: View from the Wiener Straße in the north

(*Flaechenwidmungsplan*) the property is located in a core-area or center zone mixed with commercial centers. The representative façade of the building is positioned toward the busy and fairly frequented *Wiener Straße*, which is advantageous for offices. The rather silent back of the building faces several residential high-rises that are according to the land utilization plan located in a pure residential area, which is beneficial for apartments and hotel rooms.

The sustainable and advantageous location offers a lot of potential for a rethinking of the function or for a reinterpretation of the current construction. It is a good starting point for an exploration of the interesting and complex issue of housing, office and hotel in the core area. This architectural theme also coincides with

Fig. 6: Urban Developm. Concept STEK 4.0 from 2007

violet: industrial and commercial area

pale red: sales territory

striped green: leisure/sport/re-creation

yellow: pure residential area - medium density

Fig. 7: Aerial View

Above is an aerial view of the building with its surroundings. The high-rise is aligned with the busy thoroughfare. On the other side of the building green parks and green plots can be seen, who belong to the residential buildings in the area.

my interest in residential high-rise buildings, which I have acquired since the design studio of the master's degree in Hong Kong. The additional fact that the project is positioned in my home district increases my personel interest and enthusiasm.

Analysis of the Edifice

Architect:	unknown
Edifice:	former branch office of the company „Stiefelkönig"
Location:	Wiener Straße 205 - 207 8051 Graz-Goesting
Plot Number:	167/1 and 422/1
Devotement in accordance with *FLAEWI 2002*:	center zone with commercial areas (min. density 0,5 - max. density 2,5)
Client:	Stiefelkönig Schuhhandelsgesellschaft m.b.H.
Function:	warehouse and office building, second office of the company in Graz
Current Owner*:	CEBA Bau- Revitalisierung und Finanzberatung AG Gardegasse 4 1070 Wien
Plot Area:	2482 m² (167/1: 1574 m², 422/1: 908 m²)
Covered Area:	880 m²
Paved Area:	694 m²

* at the time of the work of the diploma thesis

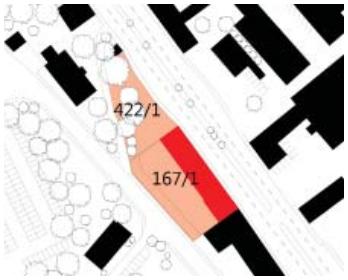


Fig. 8: Plot number

The entire plot of the planning area consists of two parcels. The northern triangular plot (422/1) was annexed to the larger plot with the high-rise (167/1) in 2006 according to the register of real estates.

Fig. 9: Parking lot - backyard

Over the years nature struggled through the concrete and slowly reconquered the backyard. This picture also shows the high trees in the area, which are arranged on a slight slope and which reduce the noise of the trains and block the direct view on the rails.

Design Characterization

The puristic high-rise building located in the thirteenth district of Graz in the *Wiener Straße* 205 to 207 exists probably since the late 1920's. It was opened in 1931 by the successful local shoe distributing company *Stiefelkönig* and was used by the firm as their second branch office in the city. It can be assumed that the building wasn't erected as it is today at once. An annex was probably undertaken in the late 1960's, transforming the first design of the construction to its current form. Since its opening it served mainly as a shoe store warehouse and as an office building for several decades until it was finally abandoned in the mid 1990's. Although the company changed the location to a neighboring district, they retained the ownership of the building. Therefore no successive owner maintained or preserved the high-rise, making it a desolate and empty warehouse that decays slowly with the time. Since its closing in the 1990's the cement asbestos façade (or *Eternit*) partially flaked off and the backyard of the property, which was originally used as a parking lot for the employees and delivery space, is gradually reconquered by nature. The huge and spacious storage rooms and the multitudinous office rooms are nowadays filled with emptiness. Solely the wet-rooms, which can be found almost in every floor, are still equipped with working toilets and functioning sinks. Despite this deserted and neglected condition of the building, one can still recognize the signature of the shoe company. Old and faded advertising posters of the enterprise adorn the walls of many individual offices, and on a closer look the functional composition of the rooms seem to be fitting and appropriate for a shoe manufacturing facility and shipping point. Nevertheless, the clearest indication of the original use of the building can be found outside on the façade. Residues of the representative corporate symbol – the word "*Stiefelkönig*" – are still clearly visible from the relatively busy *Wiener Straße*. As the only external indication of the company, the remains of that logo provide a declaration for the former function of the geometrically simple and puristic high-rise building to every passing car driver or transitory pedestrian. In May of 2002, the long legal ownership of the shoe distributing company *Stiefelkönig* finally ended and the building was handed over to the *Wiener Straße 205 Verwertungs GmbH* in Vienna after signing the purchase contract. This small business of the new owner is associated with the *CEBA Invest Management GmbH* and has already conducted several feasibility studies since 2006 and studied on new possibilities for the high-rise.

The design of the building is very functionalistic and emphasizes the basic ideas of Purism. As a workplace, it should primarily serve the production and the sale of the company and was therefore very strongly and

Fig. 10: The high-rise as Modern Architecture

clearly adapted to the operational procedures of the employees. "*Form follows function*" – functionality was considered a top priority. This conceptual idea of the design also accorded with the then contemporary attitudes towards architecture. Being a piece of architecture of the classical Modernism, the building represents the domination of the clear and strict geometric form and strictly rejects any decorative ornamentation. The construction meticulously appears as a 'pure architecture' and denies the display of any historical architectural characteristics. Since the shape of the edifice is cubical, it also corresponds with a theory of *Le Corbusier*, who saw with the use of so-called architectural primary forms, which he referred to as the "*pure forms under the light*", a regression in architecture to the primordial "*pure, naked and elementary bodies of*

Fig. 11: Northern facade

The windowless northern facade is perhaps the most representative part of the building, and was therefore used for the mounting of advertisement posters. This narrow side can be seen from afar.

Fig. 12: Modern Architecture

The high-rise is directly connected to the neighboring residential building. The very simple geometric cubic form and the strict facade of the construction indicate the concept of the design as a piece of modern architecture.

Fig. 13: Regular arrangement

The two main complexes can be distinguished easily on the outside of the building. The office complex contains a regular pattern of double casement windows, whereas the storage complex has no windows at all.

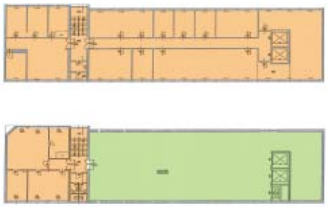


Fig. 14: Office - Storage complex

The two main functional parts of the building:
Above: Floor plan of the sixth floor, where office space (orange) was planned as a primary function.
Below: Floor plan of the second floor, where the office complex is next to the larger storage complex (green).

geometry". Another indicating feature of the style of modern architecture is the visible skeleton structure of the building. The homogeneous white façade of cement asbestos shingles is consistently interrupted by each floor ceiling, which is clearly visible on the outside of the construction. In addition to the stringent vertical lines of the building, the architect thereby achieved an emphasis on horizontal lines as well. This however, only applies to the eastern and western longitudinal sides of the house, because the narrow and windowless northern façade is implemented as a continuous representative façade, and was designed for the placement of promotional posters. Despite its advantageous and outgoing character this representative side of the building was thereby reduced to the mere function of an advertising space. The opposite narrow side in the south is also windowless and connects the high-rise directly to the adjacent four-story residential building. Accordingly, the only possibility for the building to be ventilated and exposed to natural light is on the long sides of the construction. There a grid shaped arrangement of window openings make the house appear regular and modular.

Spatial - Functional

The conceptual design organizes the building in two main parts – an office complex (orange) and a storage complex (green). This classification extends regularly over the first four floors (first floor to the fourth floor). Beginning with the fifth floor, the office complex then takes over completely.
This structural classification of the functions can also be identified from the outside of the building. Only the office rooms are provided with windows. Those huge glazings cover almost the entire façade of the office complex and therefore provide sufficient light for the employees. On the front side of the building – the long side that is next to the *Wiener Straße* – each floor has four of those single glazed double casement windows. On the back side of the building three of those windows, which are exactly opposite the glazing on the front side, were installed per floor. Instead of a fourth row of windows a continuous full-scale glazing was chosen, which is consistently interrupted by the floor ceilings. The reason for that is the internal staircase which is thereby distinguishable from the office rooms. The offices of the fourth and fifth floor, which are above the storage rooms, were equipped with smaller windows. This leads to the theory, that those office spaces were formerly also used as storage rooms, and were then later on transformed to offices. The office complex on the sixth floor above the storage complex is in turn again equipped with the large single glazed double

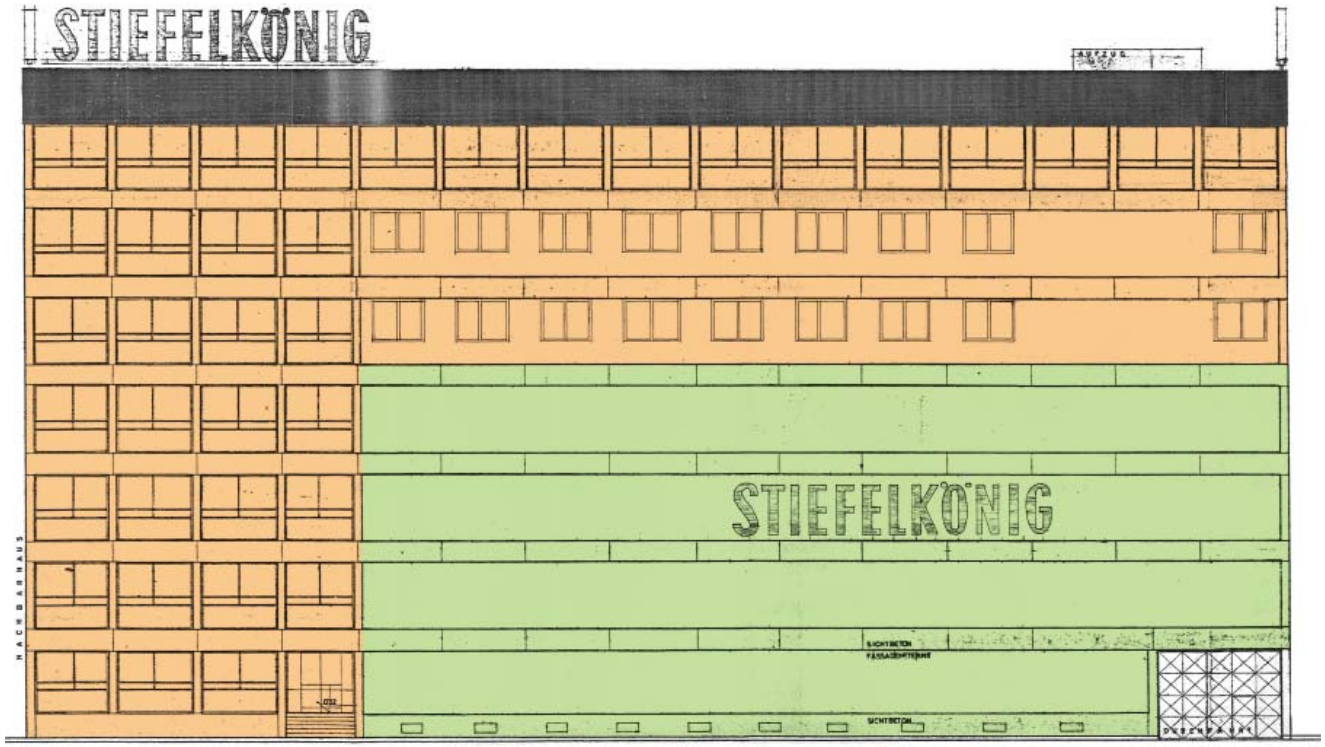


Fig. 15: The spatial distribution of the two main complexes of the high-rise

casement windows. Once more, this applies to both longitudinal sides of the building. In contrast the vast and spacious storage rooms do not have any openings in the walls and were thus illuminated purely artificially, and were most probably ventilated by an artificial ventilation system. Due to the continuous full-scale cement asbestos shingle façade on both narrow sides in the north and south, this clear distinction between the two main functional parts of the building can only be recognized on the two longitudinal sides.

Moreover, this separation of the two main parts is also visible in the floor plans of the construction. The office complex is approximately 46cm wider than the storage complex. This results in an edge on the building, which is clearly visible on the back side.

Fig. 16: Light wells - basement

Ten light wells that provide little natural light for the basement are clearly visible on the front side of the building. There are also three light wells on the backside of the high-rise underneath the concrete ramp.

Fig. 17: Edge on the building

The separation between the two main functional parts of the building is indicated by an edge on the longitudinal backside of the construction. The image shows the floor-high glazing of the staircase, which functions as a buffer zone between the two complexes.

Subdivision

Office/Conference

Storage/Delivery

Toilet/Lavatory

Storeroom/Vestibule

Elevator/Paternoster

Floor Plan First Floor

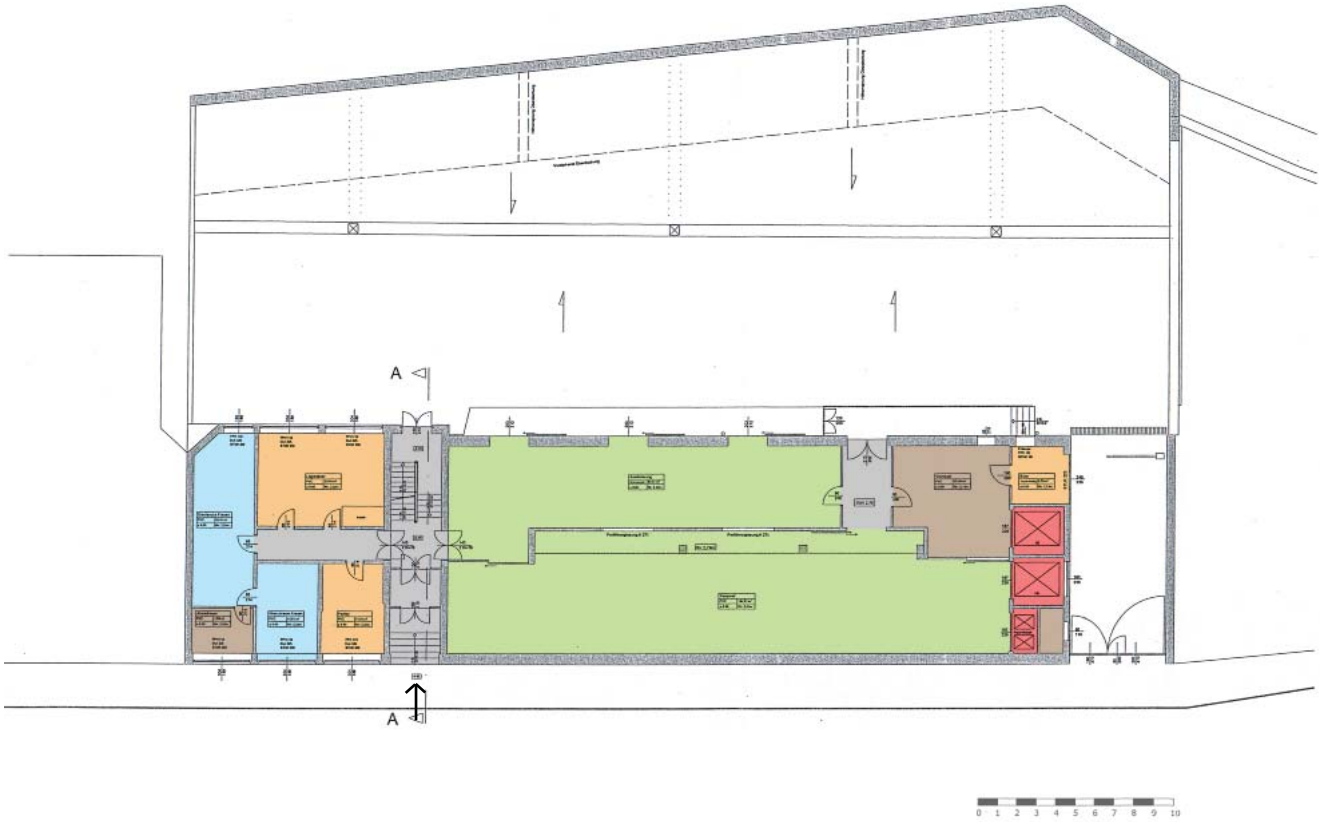


Fig. 19: Spatial distribution of the first floor with the backyard

Fig. 18: Main entrance

The main entrance to the high-rise is on the front side at the *Wiener Straße*, and is part of the office complex. To supply the basement with adequate ventilation, and to optionally win even natural light, the ground floor was raised 92cm above the street level, therefore enabling the implementation of small light wells. At the main entrance this level shift is vanquished with six steps, which also cause a separation of the semi-public entrance to the public street. Next to the entrance doors a small hatch at breast height connects the adjoining concierge room with the entrance, and thus allows the concierge to overview and contact arriving people. After entering the building through the doors you find yourself in front of the staircase and in the midst of a development corridor (grey). From there you can either reach the storage complex in the north,

or another hallway leading into the office complex to the south. According to that, the staircase therefore acts as a buffer zone and as a separation of the two main functional parts of the building. Since the staircase extends over all seven floors, it also serves a static purpose and reinforces the building as a static core. When you enter the storage complex, then you find yourself in a long windowless hall (green), which was originally used as a distribution or shipping department. For that reason it is connected with the paved backyard, so that the products can be easily loaded into transporters. Over another development anteroom (grey), which also leads to the backyard, you can, on the one hand, reach the second half of the large storage room, which was used as a shipping point, and on the other hand, you can access a spacious lobby (brown) that is linked with a small office room (orange), which was probably planned for the control and overview of the driveway that leads into the backyard. Attached to this anteroom and to the shipping point are three elevator shafts (red), which contain two fairly large freight elevators and an old paternoster, which enables the vertical access of the building either for the employees or for the vertical transportation of the products. The two freight elevators connect all seven floors of the high-rise and are therefore, similar to the staircase, a reinforcing static core of the construction. The paternoster only connects the first five floors, and therefore does not penetrate into the office complex above the storage rooms in the sixth and seventh floor, and does also not lead into the basement.

The development corridor adjacent to the main entrance enables access to all office rooms on the ground floor. The first accessible room is designed for the concierge of the house (orange), and is thus connected to the entrance with the previously mentioned hatch. On the opposite side of the hallway you can find the headquarter office for the main director of the building. Being the largest office on the ground floor it was the control center of the company and was intended to monitor and manage the processes of the branch office. Employees of the firm had to pass this office before their commencement of duties, so that they can reach the dressing room (blue) at the end of the hallway. Adjacent to the dressing room is also a tiny storeroom, and a lavatory. An attendance recorder located in the hallway next to the headquarter office controlled the presence of the employees.

This spatial arrangement of the ground floor results in a complete monitoring and observation of each incoming person. The concierge at the entrance represents the first station of this thorough control. He notes the arrival of all persons in the building. The employees of the company are controlled again with the attendance recorder in front of the headquarters office. And furthermore, with the small office on the other side

Fig. 20: Storage room - delivery

Unlike the other storage rooms in the floors above, this one in the first floor was used for two main purposes - delivery and distribution - and was consequently separated by a partition wall.

Fig. 21: Freight elevator first floor

Two huge freight elevators are located at the northern end of the building and connect all seven floors.

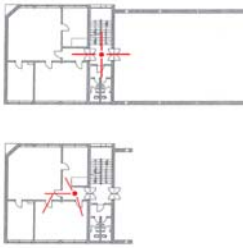


Fig. 22: Central connecting point

All floors are either accessible by the elevators or by the central staircase, which connects both complexes of the building. Moreover, the tiny corridors in the office complex connect all office rooms in each floor.

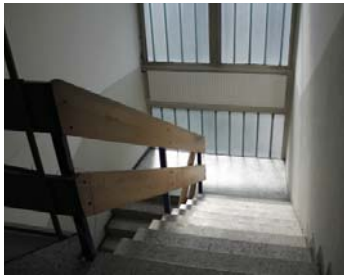


Fig. 23: Staircase as buffer zone

The dog-legged staircase between the two complexes functions as a buffer zone that separates office from manufacture. The picture shows the floor-high glazing, which is only cut through by concrete covers on the facade, which conceal the connection of the ceilings with the load bearing structure.

Floor Plan Third Floor

Floor Plan Second Floor

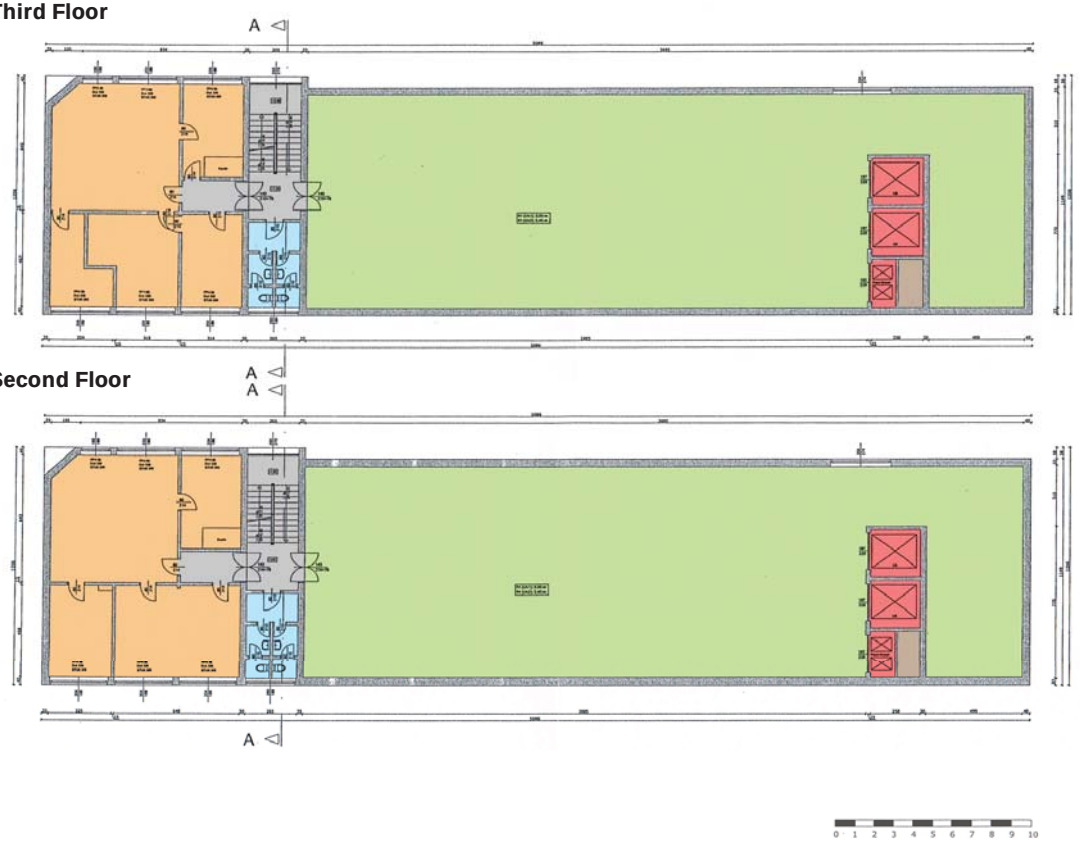


Fig. 24: Spatial distribution of the second and third floor

of the building, which is located next to the driveway, all incoming vehicles are also checked.

This functional arrangement of the ground floor repeats itself with small deviations from the second to the fourth floor. The strict division of the building in two main parts reveals itself on those floors even more clearly, because the office complex consists purely of meeting, work and office rooms, whereas the storage rooms in the storage complex are implemented as giant open halls. The staircase between those two complexes leads into the second floor. There you find yourself again in the central connecting point of the building, from where you have the choice between the office complex to the south and the large storage complex to the north. When you open the door to the storage room, then you are in the midst of a huge hall

Floor Plan Fifth Floor

Floor Plan Fourth Floor

Fig. 25: Spatial distribution of the fourth and fifth floor

(green), which is only interrupted by the elevator core (red) to the very northern side of the house. The floor slab of the second floor covers the entrance to the backyard on the first floor. As a result of that another generous room emerges behind the elevator core and is part of the large storage hall. If you, however, choose to enter the office complex from the central point at the staircase, then you find yourself, similar to the first floor, in a short conjoining hallway (gray) that connects almost all offices (orange) of this floor. Those rooms are arranged radially around this hallway. Another meeting room is at the very end of the building to the south and is accessible through the large office room. For the first time, this floor also provides a bathroom (blue), which is located directly opposite the staircase. Therefore, it is situated right above the main entrance

Fig. 26: Huge storage hall

The huge storage halls are only interrupted by the freight elevator core, with two large elevators and the smaller paternoster. The only natural light source enters this hall through the floor-high glazing opposite the core.

Fig. 27: Office and conference hall

Beginning with the fifth floor, the spatial distribution differs from all floors underneath. The storage halls are filled with office rooms like the one shown in the picture.

Fig. 28: Corridor in the sixth floor

Long corridors, like the one on the picture, connect all office rooms located above the storage halls in the fifth, sixth and seventh floor. The corridors start at the staircase and lead toward the elevator core.

Fig. 29: Numbering of the rooms

Each office room is labeled with a three-digit number. The first number indicates the floor. Thus the picture shows the office rooms in the fifth floor. The specific use of each room cannot be determined nowadays due to this concealing labeling.

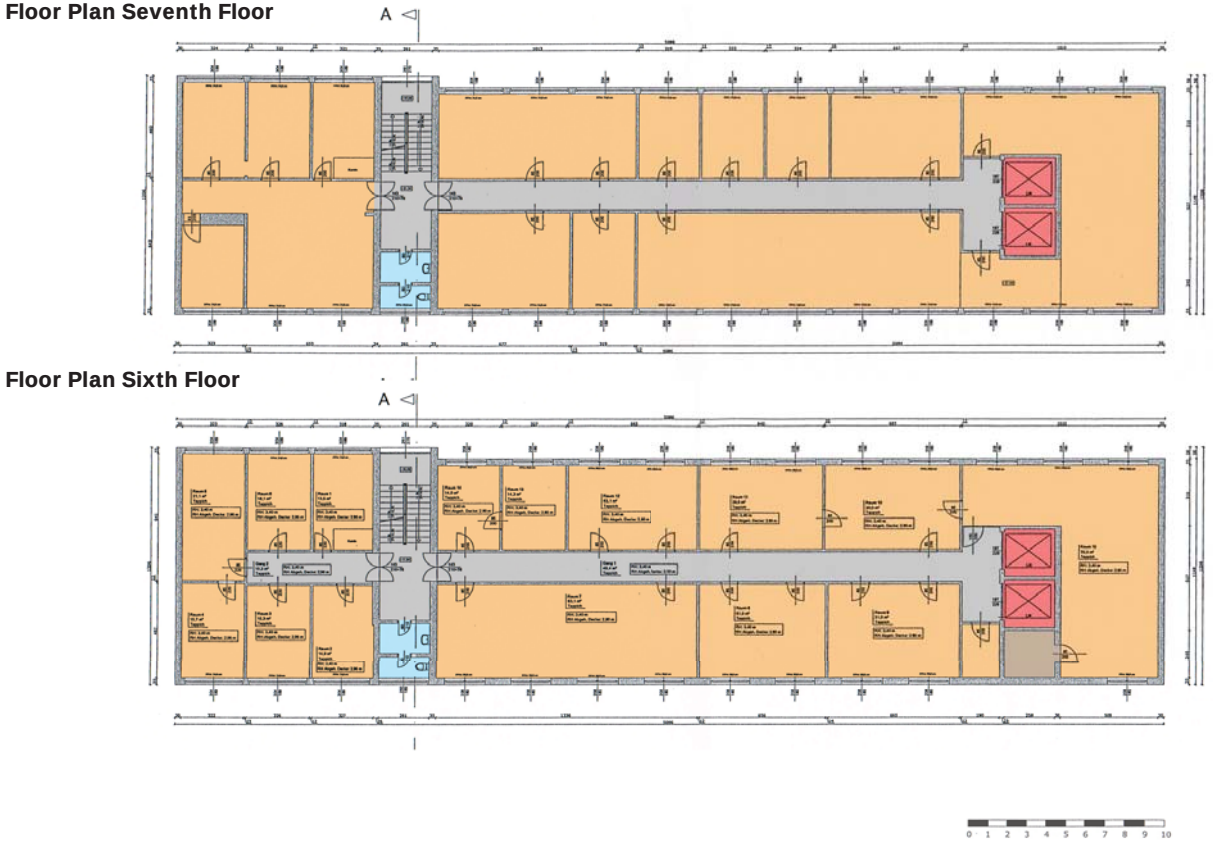


Fig. 30: Spatial distribution of the sixth and seventh floor

to the building in the first floor. In all the floors above there is a bathroom at this exact point in the floor plan as well, thereby enabling an easy and convenient way to channel away the wastewater.

Beginning with the fifth floor, the spatial distribution of the floor plan varies distinguishable. The storage complex ends with the fourth floor. All stories above that contain only working, meeting and office rooms. However, the vestibule at the staircase remains the central point of the building. From there, a very long internal corridor leads directly to the elevator shafts. All office rooms of the northern part of the building are accessible from this corridor. Those rooms are labeled with individual numbers. Therefore, it is quite hard to determine the exact use of those individual office rooms nowadays. This spatial arrangement principle re-

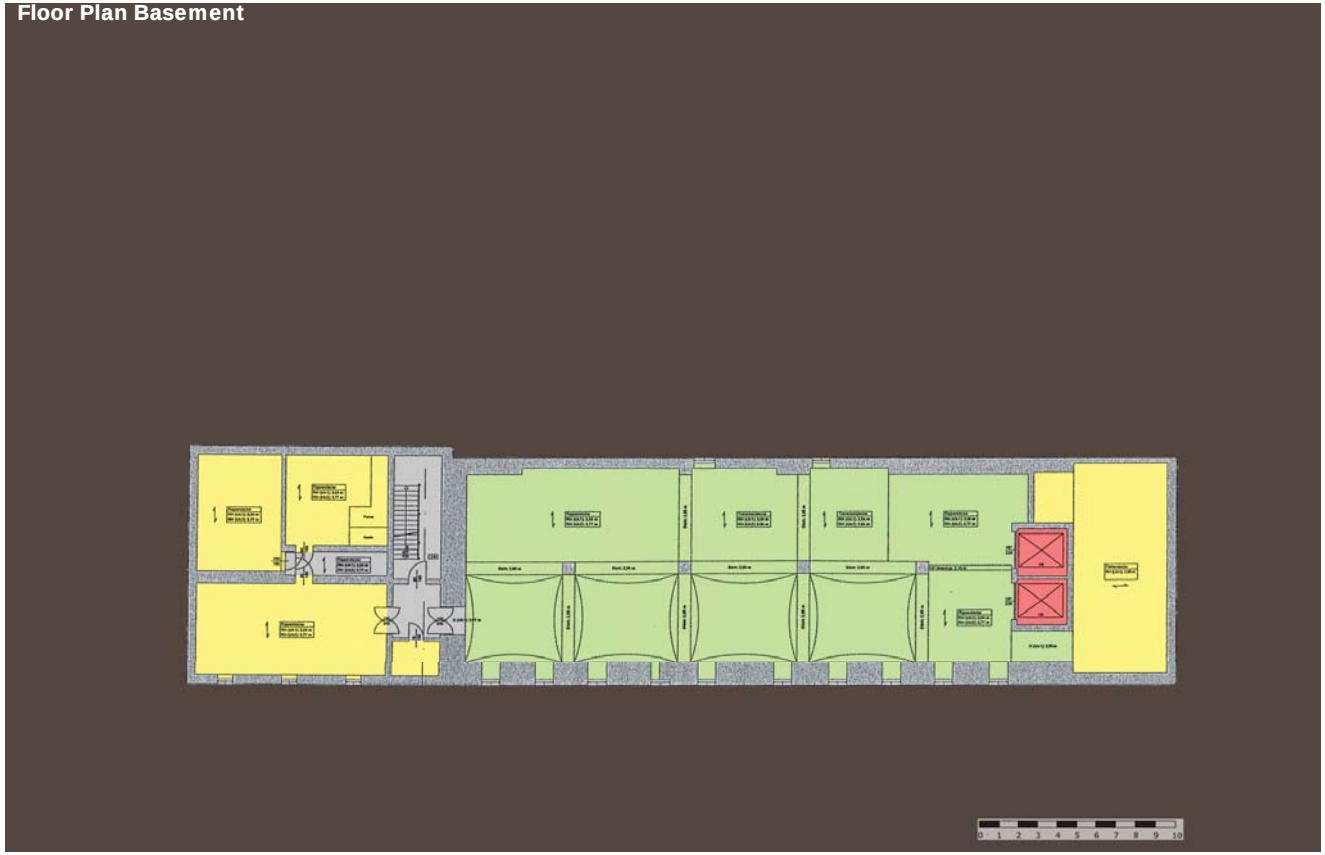


Fig. 31: Spatial distribution of the basement

peats itself in the sixth and seventh floor as well. The only significant difference between those floor plans is the absence of the paternoster elevator in the last two stories of the building. Thus you can only reach those floors with the freight elevators or over the central staircase.

The basement is due to the very poor natural lighting only usable for the accommodation of the technical building equipment (yellow), and for the storage of additional products (green). In contrast to the ceiling structures of the other floors, which are designed as beam and slab floors with suspended ceilings, which is very common for office buildings, the basement was mainly built with uncovered ribbed slabs for the plant rooms, and vaulted ceilings respectively cross-shaped vaults for the storage rooms. Despite the fifteen light

Fig. 32: Light wells - basement

Due to the abandoned situation of the high-rise, the light wells are closed with a wooden covering. Each well was sliced into the basement retaining wall and enables light to reach the basement in small quantity.

gross floor area: 4200m²

net useable area (the pure useable area without the staircase, corridors, bathrooms, walls,...):
office: 1841m²
storage: 1420m²
total: 3261m²

parking lots in the backyard: 56

Number of employees per parking space (5 employees per parking lot according to the building regulations): 280

Office space per employee: 6,58m²

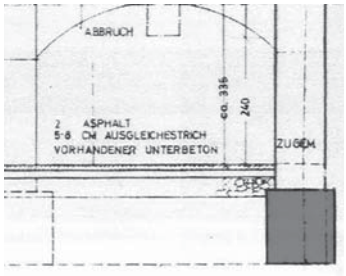


Fig. 33: Floor construction basem.

Simplified layering from top to bottom:
2cm leveled asphalt
5-8cm compensating screed
10cm sub-concrete
25cm layer of gravel
ground soil

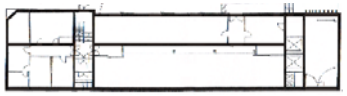


Fig. 34: Strip foundations

Several strip foundations are connected to each other and form the entire foundation of the high-rise. Each strip has an approximate thickness of 1,30m.

wells, which are incised into the basement walls on the two longitudinal sides of the building, the basement is so dark that it is not possible to enter it without artificial lighting.

Construction

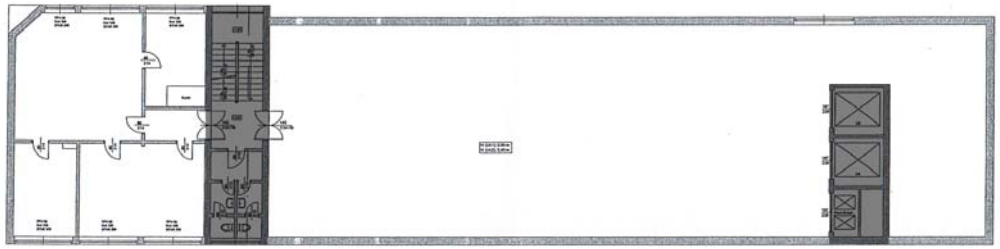
Subsoil/Foundation

The overall seven story high building with an included basement was erected as a mixture of a skeleton and prefabricated reinforced concrete construction. The primary load bearing function of the shell construction is supported by several strip foundations, whose bottom edges are approximately 6,20m below the street level of the *Wiener Straße* and therefore far below the depth of frost penetration. Those approximately 1,30m thick rectangular strips distribute the occurring compressive stresses as evenly as possible into the ground. It is assumed that the soil conditions are sufficiently robust for the acceptance of the building loads. No unbalanced subsidence can be expected at this location and therefore no tilting of the building will occur. As a result of that the ground barely had to be reinforced or compacted.
Since there are no habitable rooms in the basement, but only plant rooms and storage facilities, the architect did not include a thermal insulation below the concrete floor. A 25cm high gravel layer was filled on top of the slightly thickened subsoil between the foundation strips. Then an approximately 10cm thick layer of sub concrete was applied on the gravel. On top of this concrete, a 5 to 8cm high compensating screed was installed. As a final surface for the basement floor, a 2cm thick layer of asphalt was poured directly on the screed.

Load Bearing Structure

Since the high-rise was conceptualized as a skeleton and reinforced concrete construction, the main load bearing structure consists of multiple steel pillars in the office complex, and concrete walls in the storage complex. The reason for the use of alternate types of load bearing structures can be explained by the different construction phases, taking into account that the building wasn‘t erected as it is today at once. It can be assumed that an annex was undertaken in the late 1960‘s, transforming the first design of the construction to its current form.
A prefabricated façade of steel-reinforced concrete plates, which are insulated by the wood wool material *Heraklith*, is attached to those steel pillars and concrete walls. The concrete plates are covered with white

bracing construction cores



static shell and internal load bearing walls

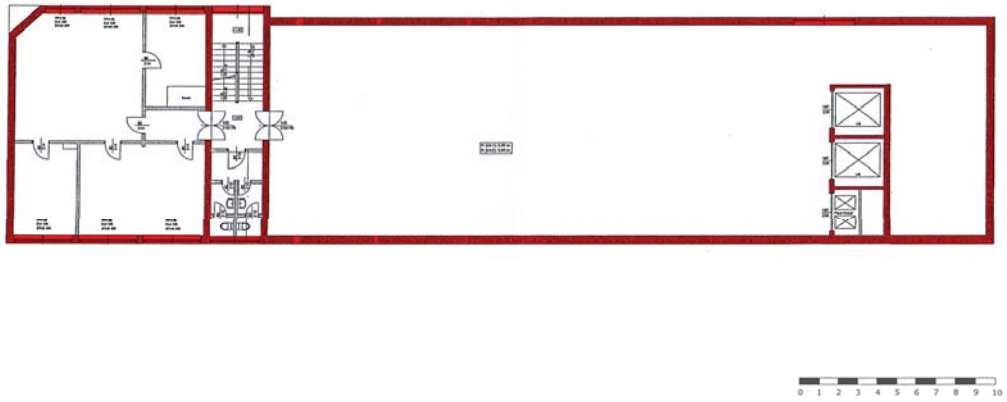


Fig. 35: Static design of the high-rise

concrete asbestos shingles, which form the outermost layer of this constructional package. The reinforced concrete steel pillars are primarily responsible for the derivation of the vertical loads. To stiffen the construction against horizontal loads as well, at least one, probably though two building cores were planned in addition to the supporting pillars in the exterior walls. The walls of the elevator shaft in the north are hereby certainly used as a static core. The staircase in the south acts probably as the second bracing core of the building. Close to the staircase and attached to the bathrooms of each floor, there is also a wide collecting duct, which collects and leads the majority of the *HVAC* (technical supply circuits like heating, ventilation, electricity,…) from the basement to the roof. Due to the implementation of those two building cores, the

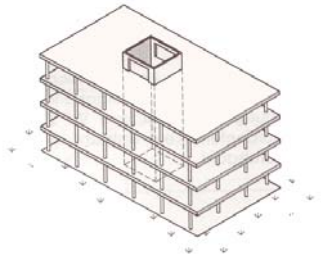


Fig. 36: Static principle

Several bracing walls are combined into one core which is responsible for the stabilization of the building. The steel pillars and the concrete walls are then relieved by horizontal loads and derivate primarily vertical loads.

Loads caused by weather

The structure has to resist the loads caused by wind, which are according to the *ÖNORM B4014* at an average of 100km/h at the site that has an elevation of 369m above sea level.

The high-rise contains a flat roof that gathers snow easily during winter. Therefore the load of the snow, which according to *ÖNORM B4013* weights 1,32kN/m² and which has a maximum height of 31cm, has to be derivated by the structure.

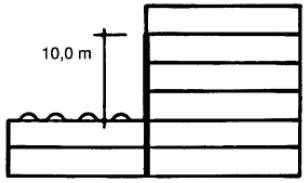


Fig. 37: Fire resistant exterior wall

Specified minimum values must be respected according to the *ÖNORM B4012*:

roofs that are accessible only for maintenance: 0,5 kN/m²
habitable rooms: 2,0 kN/m²
staircases: 3,0 kN/m²

Fig. 38: Northern facade

The windowless and fire resistant erection of the northern facade enables a possible addition of an annex in the future. Since the triangular small plot to the north is part of the whole site, an annex will be incorporated in the design.

reinforced concrete and steel pillars in the exterior walls are relieved from the horizontal loads. Therefore, they are constructed relatively thinly (approximately 30 x 30cm). Since the narrow sides of the building in the north and south do not contain any windows, the spaces between the pillars are filled here with load bearing concrete walls, which are covered - in analogy to the prefabricated reinforced concrete plates on the long sides - with concrete asbestos shingles, which again form the outermost and final surface of the construction.

These measurements guarantee the fulfillment of the structural and static requirements of the high-rise. All occurring loads are accepted, distributed constantly, and derived into the ground as evenly as possible. The live load and the dead load cause a deflection of the load bearing ceilings. This distortion may not result in a loading of the subjacent light partition walls. The ceilings of the storage halls are hereby unaffected, since there are no partition walls installed. Thus those ribbed slabs overbear the entire width of the building. However, the floors in the office complex, which are also designed as ribbed slabs with suspended ceilings, are separated from the partition walls with the use of adaptive upper connections.

The spreading of fire within the building, or the flashover to an adjacent building is prevented by dividing the construction into separate fire zones. Thereby the office complex, the storage complex and the intermediate staircase are designed as individual fire sections. Since the high-rise is directly connected to the neighboring four-story residential building, the dividing fire wall has to be executed as „fire resistant" (*F90*) in this dense urban scenario. According to the *TRVB B 108* all exterior fire walls have to be built on the own property. Therefore two connected buildings must have individual fire walls, which are situated within their according plot at the property boundary. This demand is met in this specific situation. Since both narrow sides of the high-rise are designed without windows and are executed as fire-resistant, and since both are located at the property boundary, it can be assumed that the architect wanted to enable a possible future connection of another building to the narrow northern side.

Basement Retaining Walls

Due to the basement, the foundations of the building are 6,20m below street level. Therefore the retaining walls constructed with site-mixed concrete are in contact with the soil and exposed to the earth thrust and the hydrostatic pressure. Those loads increase with the depth. The thickness of the walls varies throughout the basement. Nevertheless, even the thinnest wall with a width of approximately 43cm is capable of re-

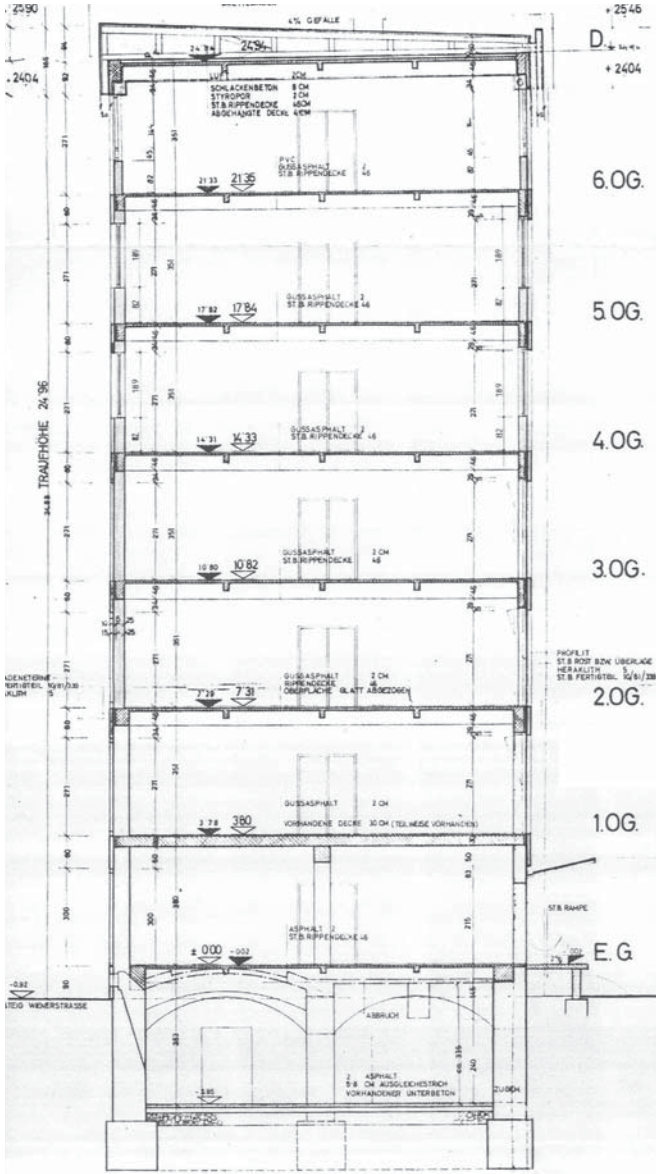


Fig. 39: Section of the building

sisting those loads. Likewise to the basement floor, the walls are also not additionally insulated due to the missing of habitable rooms. On the inside, the walls were left raw and untreated. The simple composition of these construction elements solely fulfills the occurring demands such as the derivation of the vertical loads of the entire building and the derivation of the horizontal loads especially from the earth thrust. To remain firm and persevering under the steady influence of wind-driven rain and leakage water, the walls are secured with probably several layers of sealings on the outside. It can be assumed, that those elements also correspond with the then obligatory guidances regarding the cleading. Nowadays, the *OIB Richtlinien* demand a minimum thermal conductivity of 0,40 W/m²K for basement retaining walls and floors.
Additionally, the airborne sound caused by the technical equipment is reduced by the heavy mass of the walls and the insulation of the ceiling.

External Walls/Facade

The external walls are primarily prefabricated and attached to the shell construction of the building. The outer appearance of the entire facade is thereby to a large extent homogeneous, with slight differences between the longitudinal and narrow sides, and does not reveal its static structure underneath. As previously mentioned, the building was probably constructed in two separate phases, thus having two different load

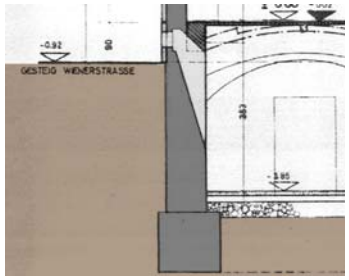


Fig. 40: Basement retaining wall

This section shows the basement retaining wall on top of the strip foundation. A light well, which is sliced into the wall, is also visible in the section.

Fig. 41: Two sides of the building

The high-rise was designed with two different facades, which are nevertheless built in the very same construction. The difference is the implementation of windows and concrete coverings on the longitudinal sides, whereas the narrow sides are continuously covered with the asbestos shingles.

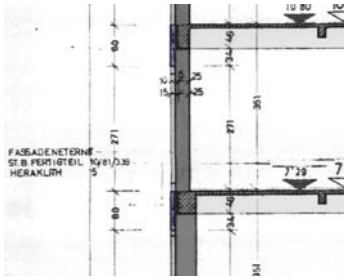


Fig. 42: Section of the facade

This section shows a simplified illustration of the exterior walls. The concrete covering of the connection detail, where the ceiling meets the load bearing structure, is visibly attached to the facade.

Fig. 43: Wood wool - Heraklith

Insulation plates with a thickness of 5cm were used as the thermal insulation of the building. The Austrian manufacturer *Heraklith* produced the insulation for the high-rise.

bearing structures - the steel pillars in the office complex, and the reinforced concrete walls in the storage complex. However, the constructive layer of all exterior walls is similar. The prefabricated steel-reinforced concrete plates, which are insulated by the wood wool material *Heraklith*, are attached to the load bearing structure. The concrete plates are covered with white concrete asbestos shingles, which form the outermost layer of this package. It can be assumed that this bundle of different layers is designed as a composite with no air-ducting layer. Therefore, the wood wool material represents a core insulation, which is placed between the concrete plates and the concrete walls, respectively the steel pillars. As a result of that, the pillars have to provide an inner layer as well to enclose the insulation and to form the inner surface, which could have been a brick wall or a thin concrete wall as well. Despite the narrow windowless sides to the north and south, which are both covered with the asbestos shingles to its entirety, the longitudinal sides contain, besides several windows, concrete covers for each constructive detail, where the ceilings are connected with the load bearing structure. Consequently the ceilings are visibly foreshadowed on the outside of the building, and result in the identification of each individual floor. In addition to these concrete covers, the window openings, which are arranged in a perfect pattern, are the only other elements that break through the otherwise solid and uniform white shingles facade.

Besides the static and architectural demands, the exterior walls fulfill many other requirements as well. A very important aim is to provide comfort to the occupant and to protect him and the structure itself from any harmful environmental influences. The thermal insulation does not require being as good as in residential buildings, since it is only occupied temporarily each day, but it still has to offer coziness for the employees. The wood wool material *Heraklith* is measured with only 5cm, which is compared to today‘s standards very thin. It is not clearly visible in the plans, but it can be assumed that the insulation covers the entire shell of the building, therefore preventing the existence of thermal bridges. However, it also can be assumed that the insulation - in combination with the 25cm thick concrete wall - satisfied the regulations at the time of its construction or renovation. Nowadays, a recommended value for the temperature in habitable rooms is between 20 to 23°C. According to the *OIB Richtlinien* from October 2011, the maximum thermal conductivity of exterior walls is prescribed with 0,35 W/m²K. In addition to that, the surface temperature of the inner surface of the exterior walls may not differ more than 2 to 3 Kelvin from the ambient temperature, otherwise the comfortableness of the occupant deteriorates. Anyways, it is certain that the layering of the facade succeeded in prohibiting the occurrence of harmful thermal expansions, which otherwise could have resulted

Fig. 44: Facade on the long backside of the building

in damages. Thus, the individual elements and their connections have a sufficient elasticity to absorb these thermal stresses. In summer, the coziness of the occupants is guaranteed by the 25cm thick concrete walls and the 10cm thick prefabricated plates, which both serve as good heat accumulators. For providing sufficient shadows in the hot summer days, all of the windows are equipped with either timbered window shutters, or modern window blinds.

Next to the thermal insulation, the facade also has to satisfy several demands considering the moisture proofing. By all means, the construction, especially the core insulation, has to be protected against moisture. Since the layering of the facade is assumed to be a composite, the inflow of moist air has to be prevented

Fig. 45: White asbestos shingles

The facades on all sides are dominated by the white shingles, which are attached to a timbered substructure which is connected to the prefabricated concrete plates. Currently an additional layer of thin timbered boards covers the facade of the first floor.

Fig. 46: Timbered window shutter

The old windows in the entire seventh floor and in the office complex are equipped with two wooden shutters each. The probably newly added windows in the fifth and sixth floor contain more modern window blinds.

Fig. 47: Facade absorbs noise

The facade on the front side of the high-rise is exposed to the heavy airborne sound from the highly frequented thoroughfare. The current construction does not satisfy the demands for the residential use.

Fig. 48: Concrete covers

The individual floors of the high-rise are indicated by the concrete covers. Thus all seven floors are clearly visible on the outside. However, this applies only to the long sides of the building, because the windowless northern and southern side don't contain those representative coverings.

from both sides of the walls. Therefore, the whole package must be air-tight to ensure that the entry of water vapor into the construction is reduced to a harmless level. Rain and wind-driven rain are held off by the asbestos shingles and do not permeate into the construction.
Furthermore, airborne noise from the outside is sufficiently insulated by the mass of the reinforced concrete plates and walls and the rather thin thermal insulation. Nevertheless, due to the highly frequented street adjacent to the building, the current noise protection does not suffice for residential uses and consequently has to be improved. Nowadays, the minimum required noise insulation of exterior components has to be 33db ($R'_{res,w}$) according to the *ÖNORM B8115*.

Floors

The ceilings of the building are constructed in different ways. Primarily they are designed as 46cm thick ribbed slabs, which can be found mainly in the office complex, but there are also many 30cm thick straight concrete slabs, which are, for instance, used in the separating buffer zone between the complexes at the staircase, and in the storage rooms of the first floors. The reason for the use of alternate ceiling types is

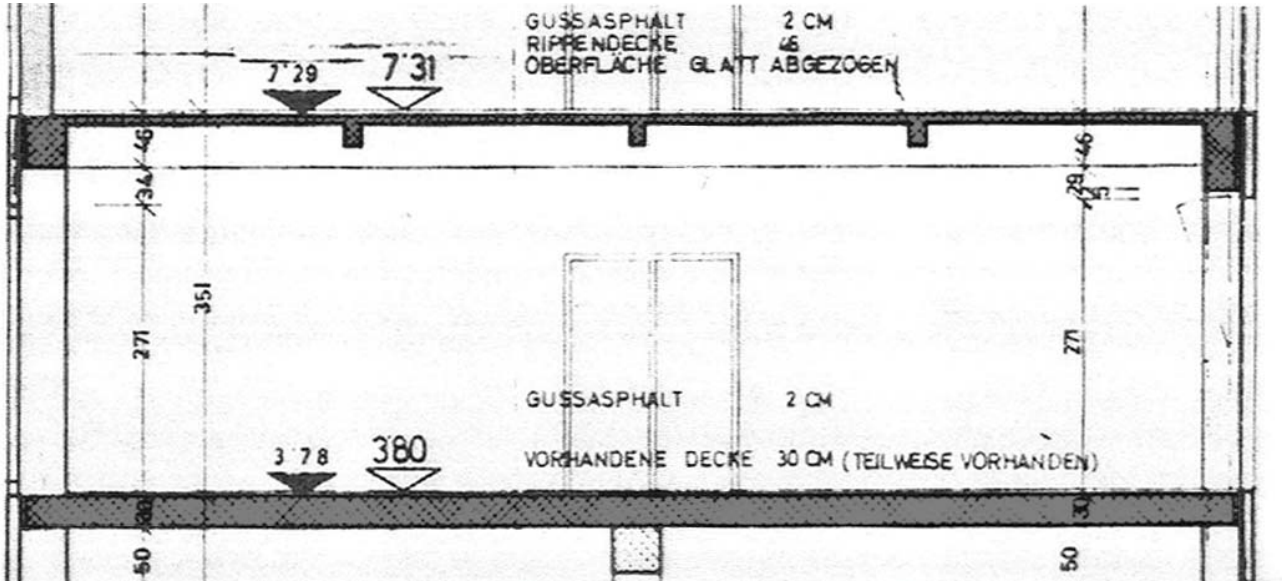


Fig. 49: Two different types of ceilings

again the result of two different construction phases. As implied by the section plans, all concrete slabs indicate the shell ceilings from the very first design of the high-rise. Therefore, all ribbed slabs were presumably added during the annex in the 1960's.
Either way, all ceilings of the construction, except those in the buffer zone, are topped with a 2cm thin layer of melted asphalt, which represents the final surface in the storage rooms. In the office complex, however, a coating of polyvinyl chloride was installed on top of the melted asphalt. The floors of some offices especially in the last two stories are covered with a thin carpet, which was put on top of the asphalt. The ceilings in the buffer zone, which are mainly built as straight concrete slabs, have a slightly different assembly. Lean concrete poured on top of the slab was probably used as an equalizing layer. Then 2cm thin mortar bedding was used to hold the 4cm thick terrazzo plates.
The plans do not indicate any implementations of layers for subsonic noise reduction. Thus, the thin carpets were the only measurement for the reduction of noise propagation. Airborne sound however, is prevented from permeating to other floors, due to the mass of the 30cm respectively 46cm thick slabs, which function themselves as good sound insulations. Because the individual floors do not separate rooms of different climate, the addition of thermal insulation was not necessary. However, there is one ceiling in the building that actually requires a thermal insulation. It is the part of the ceiling that covers the main entrance of the first floor. Since it is thereby considered a part of the thermal shell of the building, this ceiling area was insulated with multiple insulation boards. Suspended ceilings are installed underneath the ribbed slabs, which could have been equipped with insulation and which offer sufficient space for possible technical ducts or chords. The concrete slabs do not have any layer underneath and are therefore visible as the final surface.
The parts of the ceilings which belong to the wet-rooms, especially the lavatory, are probably protected against moisture with the addition of sealings or primers. But here again, the simplistic layout of the floor construction entirely fulfills the demands.

Roof

The roof is constructed by many individual layers, which altogether form a flat roof with a steady incline of 4% from the front longitudinal side to the back. The construction method represents a roof with air insulation or better known as a cold roof. Like all the ceilings in the building, the shell construction of the roof also consists of a 46cm thick ribbed reinforced concrete slab. On the inside, a 4cm thick suspended ceiling was

Fig. 50: Suspended ceiling

The ribbed slabs in the office rooms are attached with suspended ceilings, which provide sufficient space for ducts or electrical cords, whereas the straight concrete slabs are merely finished with a coat of interior painting.

Fig. 51: Open ribbed slabs

Some ribbed slabs, primarily in the storage halls, are not concealed with a suspended ceiling. Therefore the electrical cords and the lightening are visibly attached to the raw slabs.

Fig. 52: View to the south

Especially the last three floors of the building offer a vast view. On this picture from the roof you can see the surroundings of the district along the *Wiener Straße* and you can even see the *Schlossberg* in the distance.

Fig. 53: View from the roof - north

This picture illustrates very well the separation of two different areas. All buildings west of the *Wiener Straße* are primarily residential buildings and therefore contain more green gardens and parks. All the buildings east of the street are primarily industrial and commercial buildings with residential apartments.

Fig. 54: View to the north on the roof of the building

attached to it. On top of the ribbed slab the thermal insulation was placed, which was made out of 2cm thin polystyrene. Although not specifically mentioned in the plans, the insulation was probably separated from the concrete slab with a steam break, therefore ensuring that occurring moisture does not penetrate through the insulation in a harming quantity. A steam barrier, also known as a baffle, isn't necessary in this situation since the cold roof contains a layer of air, that leads away the permeating moisture. Also not mentioned in the plans, but very likely, the polystyrene was separated from a layer of 8cm thick slag concrete with some sort of interlayer. Directly attached on top of the slag concrete, the lower chords for multiple timbered sub-constructions enable the flow of air through the roof. On top of these timber chords several vertical beams

carry the formwork. Due to the fact that those beams differentiate in height, the formwork enables the incline of 4%. As the final outer surface of the roof, very thin 6mm galvanized steel plates are installed on the formwork. To protect the whole package from any harmful environmental influences, the steel plates and the formwork also cover the sides of the roof and end at the top edge of the double casement windows of the sixth floor, thereby resulting in a very visible architectural measure.
This constructional bundle of different layers is required to fulfill several standards. Foremost, is has to protect the occupants and provide them with coziness, and furthermore it has to withstand any harmful influences and guarantee a stable and long-lasting functioning. It can be assumed that this fairly old construction corresponds with the official requirements back then when the high-rise was built in the late 1920's. Nowadays, it wouldn't be acceptable to design a roof like that anymore. The standards have changed. According to the *OIB Richtlinie* of October 2011, the maximum thermal conductivity for roofs has to be under 0,20 W/m²K. Not precisely recognizable in the plans, but very probably, the sides of the roof respectively the top of the external walls are also insulated underneath the formwork. Therefore the insulation encloses the whole thermal shell and does not include thermal bridges. Moreover, the construction is statically able to carry the occurring local snowfall in winter, which also forms a „natural insulation layer".

Internal Constructional Elements

All internal walls in both complexes are built in lightweight construction. They are relatively thin and therefore probably designed as either hollow stud framing with gypsum or brick walls. Not constructed to bear any loads, they are thus merely used as partition walls. They also do not require any capabilities regarding thermal insulation since they are situated primarily in the office complex, where there are no crucial temperature differences. Due to this fact, the standards for moisture proof are similarly unimportant. The partition walls in the bathrooms are almost entirely covered with ceramic tiles, which keep off the water and moisture. A waterproof layer of sealing or primer is probably used underneath the tiles for full moisture guard. The partition walls in the remaining wet-rooms, like the lavatory or wardrobe are not heavily exposed to water either and are thus merely sealed with waterproof primers. Sound insulation is simply managed with the spatial arrangement of the individual rooms. The relatively quiet office rooms are separated from the manufacturing and distributing storage rooms with the central staircase and bathrooms. Thus again, the partition walls do not require any specialties concerning the sound reduction.

Fig. 55: Installation ducts

Several installation and funnel ducts are located adjacent to the staircase in the central buffer zone. They connect all seven floors and lead to the roof. This and the elevator core are the only elements that break through the roof construction.

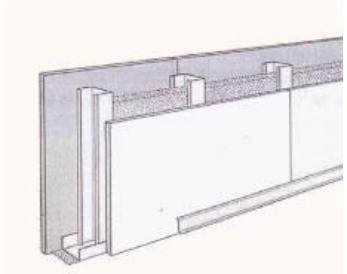


Fig. 56: Gypsum partition wall

The internal walls could be constructed like the example on the picture above. Since the partition walls do not require any capabilities concerning thermal insulation or moisture proofing, they also could have been erected as thin and lightweight brick walls.

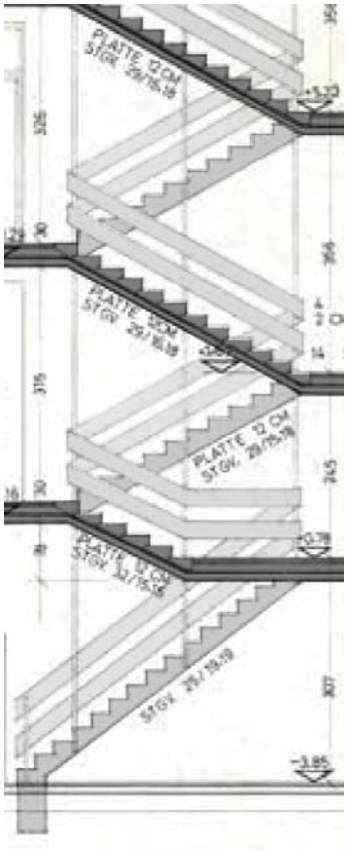


Fig. 57: Section of the staircase

Each floor is connected by 24 steps, which are divided into two parts and separated by a platform - therefore making it a dog-legged staircase. The stairs to the basement differ slightly, because approximately 16 steps, which are not separated by a platform lead directly downstairs.

The staircase in the building is produced with 12cm thick prefabricated reinforced concrete plates. The individual steps were built on top of these plates afterwards. Together each plate with its steps forms one element of the staircase. Two of these elements, which are separated by a platform, are required to connect two floors. Therefore this staircase represents a dog-legged stair. Each element has 12 concrete steps and the ratio between the tread and the riser is approximately 29cm to 16cm. The width of the staircase is about 1,40m and therefore far over the minimum requirement, which is 120cm according to the *ÖNORM B5371*. Two wooden boards mounted on a steel framing operate as a hand rail on both sides of the stairs.
Similar to the partition walls, the staircase does not have any special requirements regarding thermal insulation, sound insulation, or moisture proof, because it is spatially separated from both complexes, and does therefore not lead directly into rooms of different climatic conditions. However, it can be assumed that resilient separation layers connect each prefabricated plate with the ceilings for subsonic noise protection. The stairs are also structurally separated from the walls for the same reason.

The design task in comparison with similar existing projects

Gasometer Simmering Vienna
Like the high-rise in the *Wiener Straße*, this very old structure in Vienna also became a revitalization project. Similar to the my project, the *Gasometer*, which consists of four former humongous gas tanks that originally belonged to the *Städtisches Gaswerk Wien* (civic gas plant of Vienna), was once used as a factory building, and was then renewed to a residential and office compound. The whole structure was planned and built between 1896 and 1899. The appearance of these four gas domes of the late *Wilhelminian style* (Gruenderzeit) resembles buildings of the English Industrial Architecture. Technically, they work as mere shell buildings with no load bearing functions and were entirely constructed in brickwork. Each of them contained an approximately 34m high iron gas container, which was statically held by eighteen vertical steel columns. Those containers were only used for the storage of the gas and did not actually work as a gas meter. Therefore the still very common name *Gasometer* is misleading. The actual measuring of the gas was done in another building. The interior of the construction was accessible through multiple gangways and stairs along the inside of the walls. The external diameters of the four gas tanks are about 65m, and each of them has a ceiling height of 72,50m. Basically, each of them had a dome-shaped roof with a span-length of 63,80m,

Fig. 58: Aerial photograph of the four domes from the east

which was constructed on top of the 5,40m to 1,65m thick external brick walls. Due to the fact that the actual four buildings don't bear any loads, the designs of the revitalization project had to be self-supporting and were not to transfer any loads to the existing structure.

The gas company abandoned the *Gasometer* in 1986. From that point on, it was deserted and unused for several years, and therefore shared the same fate as the high-rise in the *Wiener Straße*. Being used for purposes other than intended, it was finally decided to begin a feasibility study for a renewal of the four domes with the focus on residential use in 1995. The main goal was to develop the highest possible standard of quality for living and other site-appropriate uses. Four architects, *Jean Nouvel* (Paris), *Coop Himmelb(l)au*

Fig. 59: The Gasometer in 1899

Shown here are the four former gas tanks with a storage capacity of 90.000m³ after their construction. The gas tanks were closed after the changeover from coal gas to natural gas. The picture shows private gardens in front of the original gas domes.

Fig. 60: Interior view on the wall

Without the humongous gas tanks, which were placed into each dome and supported by the 18 steel pillars, the Gasometer offered a huge and high space, which was frequently used for clubbings and discos in the 1990's.

Fig. 61: Interior view - steel pillars

18 steel pillars were used to support the large gas tanks within the historic walls of each dome. Each pillar was architecturally indicated on the outside of the brickwork facade.

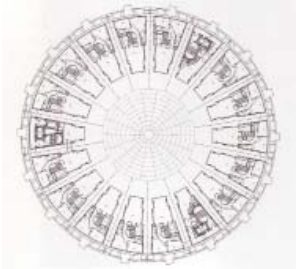


Fig. 62: Nouvel's floor plan

Jean Nouvel's design for the revitalization of the Gasometer contained 18 individual residential towers in reference to the 18 historic steel pillars. The center of the design is left empty for the use of recreational spaces.

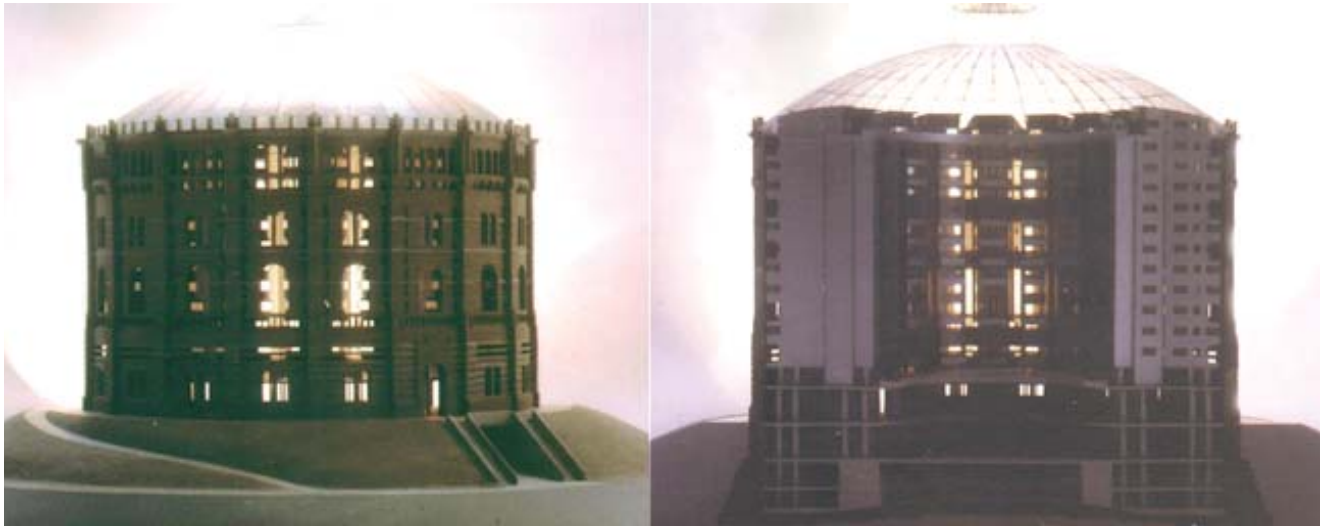


Fig. 63: Jean Nouvel's design for „Gasometer A"

(Vienna), *Manfred Wehdorn* (Vienna), and *Wilhelm Holzbauer* (Vienna), were assigned with this task, and had to fulfill several requirements. Among these are for example the demand to provide 700 to 750 apartments, a student dormitory, and other temporary forms of housing. There was also a demand for a commercial zone, an event hall with a capacity of 3000 people, and a subterranean garage. The concept of each architect incorporated the preservation of the exterior appearance of the buildings due to the law of conservation of ancient monuments. This restriction does not exist at the high-rise in Graz, since the office for ancient monuments did not protect the house, although it was built a very long time ago as well.

Jean Nouvel's main concept was the idea to implement an annex to the existing gas dome, which doesn't disturb the main appearance of the building as an industrial structure. The added design in the interior of the dome is visually very fragile and lightly, and was mainly thought to be a contrast to the massive brick walls of the historic construction. His design contains 18 individual residential towers. Each represents a segment of the whole design and is erected with 14 main floors within the dome. The towers are constructed with prefabricated concrete ceilings, reinforced concrete walls and other standardized elements, which guaranteed a convenient building cycle. They are separated from each other with an empty air space and they are aligned radially along the brick walls. Thereby *Nouvel* achieved to provide a connection to the outside

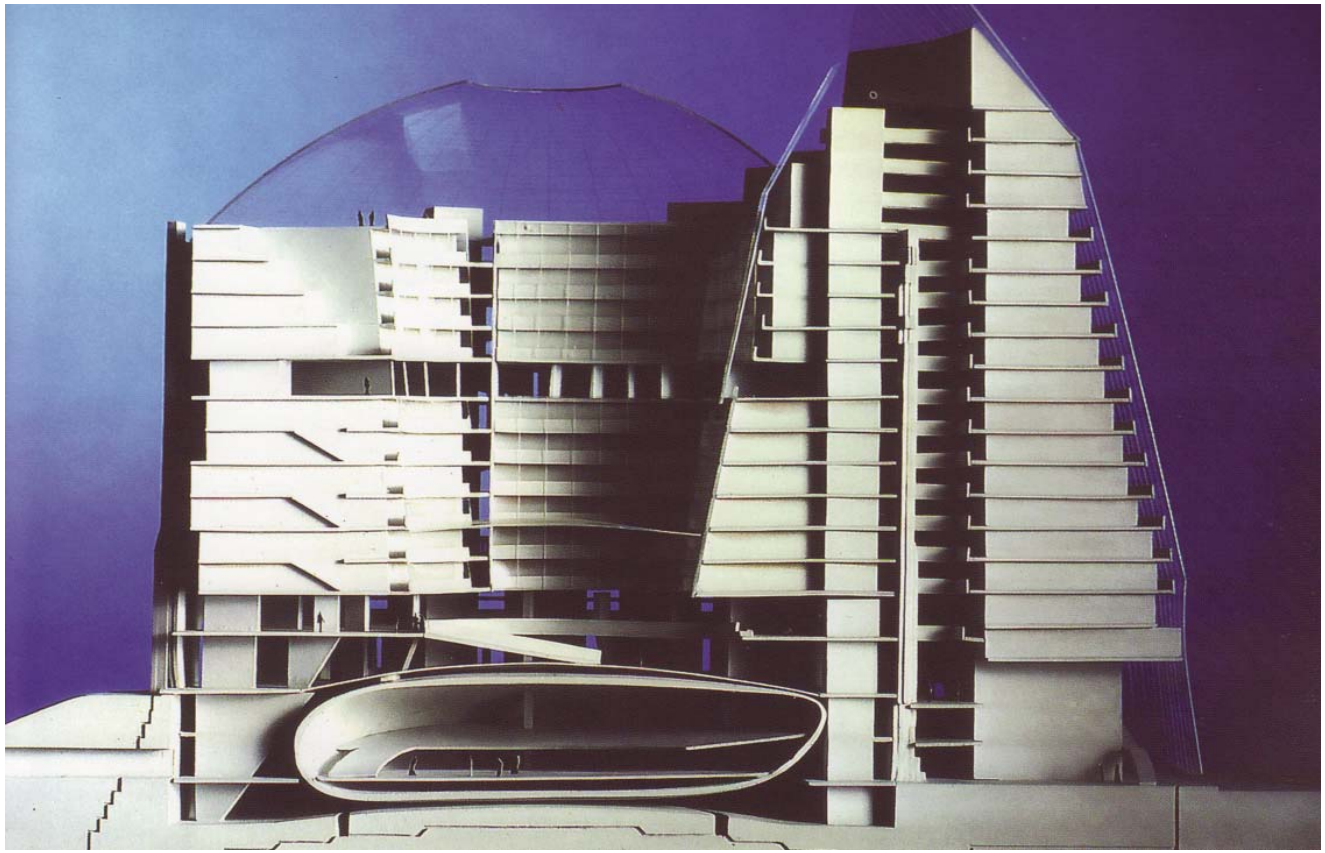


Fig. 64: Coop Himmelb(l)au's design for „Gasometer B"

through the giant openings of the brick walls for every apartment. Moreover, natural light is able to reach the center of the dome due to the empty spaces between each tower. The actual facade for the new annex, which is thoroughly covered with glazing, faces the central interior space. This space is separated from the mall underneath the apartments with a glass dome, similar to the glass doom that forms the roof of the historic construction. Thus the shopping area is also exposed to natural light. Altogether, the design contains a commercial area, 183 both single-story and duplex apartments, and a subterranean garage.

In the contrary, *Coop Himmelb(l)au* does not preserve the general exterior appearance of the dome. Their design incorporates, in addition to a circular annex inside the historic construction, a building on the outside

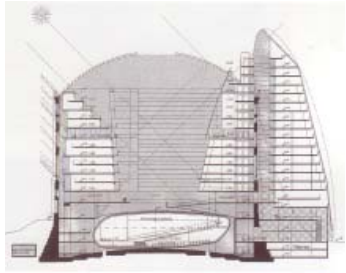


Fig. 65: Section of the gas dome

This section and the model to the left show the connection between the historic construction and the newly added edifice. The event hall underneath the shopping center is structurally and acoustically separated from the floors above.

Fig. 66: Architectural model

This picture shows the annex which is located directly in front of the old brickwork walls, which are thereby concealed entirely. Both the interior design and the annex on the outside are connected to each other.

Fig. 67: Architectural model

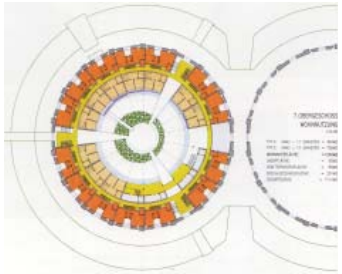


Fig. 68: Wehdorn's floor plan

Wehdorn's design for „Gasometer C" also contains 18 residential segments, which are directly adjacent to the interior of the historic walls. The architectural model depicts the center of the design with its many trees. Furthermore, the multi-story atriums are visible in the model as well.

as well, which overtops the old gas dome, and thereby conceals its brickwork facade. This new building offers many different forms of living. Similar to *Nouvel's* design, a commercial zone was also built along with a sky lobby, which is accessible for the residents. The new circular volume inside the dome hosts offices and apartments with different forms of living, like duplex apartments, loft apartments and smaller student apartments. Altogether, their design includes a commercial zone, 243 apartments in the interior annex with 12 floors and the exterior building with 18 floors, a subterranean garage, and a multi-functional event hall with a capacity of 3000 people. This event hall was a fundamental requirement for the revitalization project. One of the four domes had to be included with it and *Coop Himmelb(l)au* made the move. The hall is designed as a static shell construction, which is not connected with the foundation of the structure above it. Therefore the propagation of subsonic and airborne sound is controlled. The hall is operated by an individual event managing company, which provides the space evenly for many different activities (rock, metal, and pop concerts (60%) - theater, musical, dancing (40%)).

Similar to *Jean Nouvel*, *Manfred Wehdorn* also preserved the outer and inner appearance of the gas dome as good as possible. He achieved this by providing a direct view to the glass dome roof, and to the interior of the brickwork walls with the historic steel pillars. This is possible because of the multi-story courtyards or atriums along the historic walls. Furthermore, *Wehdorn* incorporated many ecological elements such as the representative trees in the center of the interior space. Like *Nouvel*, he also filled the inside of the *Gasometer* with 18 residential segments, which are, however, directly connected to each other and do not provide any empty air space between them. Natural light reaches the center through the many already mentioned multi-story atriums. Three of those segments were used entirely for staircases and elevators. A fictitious line between these three segments and the center platform with the trees represents the radius of the circular design. These lines form the bridges that connect the central platform with the segments, which are aligned along the historic walls. Attached to the facade of the new volume that faces the central interior space, *Wehdorn* implemented an access gangway, which is connected to the three segments with the staircases and elevators, and which enables the occupants to walk to the top floor of the construction. This gangway also includes many green squares. The whole design offers a commercial zone, 211 apartments both as lofts and duplex flats, and a subterranean garage with 260 parking lots.

The last gas dome was renewed by *Wilhelm Holzbauer*. Despite his colleagues, *Holzbauer* was not assigned with the task directly, but had to enter a competition with five other architectural firms. His winning concept

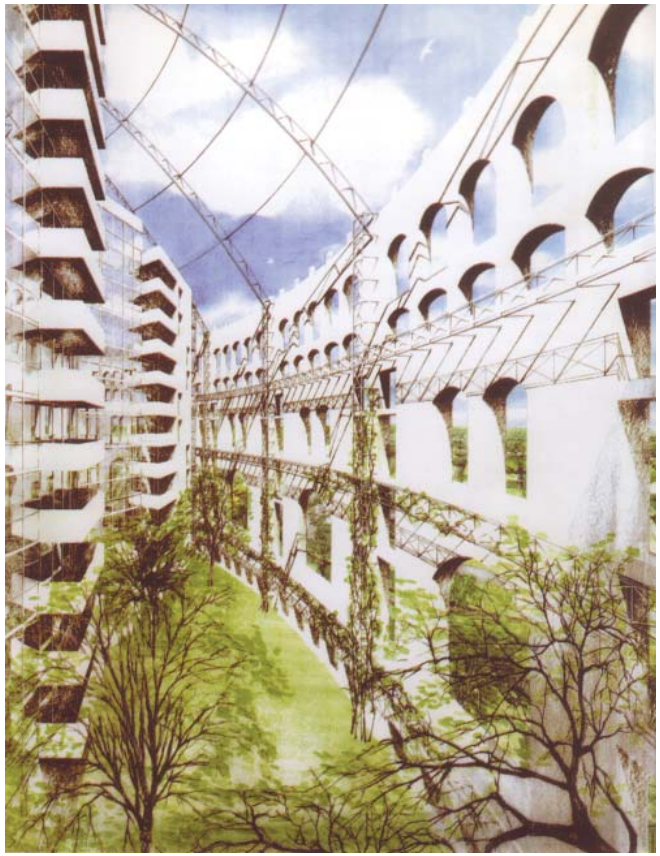


Fig. 69: Holzbauers sketch for the courtyards

proposed the idea to preserve and visibly emphasize not only the entire outer appearance of the brickwork facade, but also the entire interior view of it. Despite all other designs, *Holzbauer* added a volume that was not aligned along the historic facade, but was placed in the center of the dome. Three „arms" of this central annex reach out and almost touch the brickwork walls, thereby creating three courtyards, which are each surrounded by two sides of the new building and the historic wall. Small gardens are located at the courtyard. The facades of the annex could be vegetated, and the courtyard is equipped with several trees. The huge openings of the gas dome walls and the open roof, built with steel plates, enable natural light to reach every apartment. The new volume was erected as a skeleton construction with reinforced concrete. Altogether, *Wilhelm Holzbauer's* design included two stories of commercial area, 241 apartments arranged in 15 floors, a Kindergarten, and four subterranean floors for parking lots.

The revitalization project of the *Gasometer* has several similarities to my project in Graz. The high-rise in the *Wiener-Straße* and the four gas domes in Vienna were once used as industry buildings and were abandoned for several years. They are both located in a general commercial and industrial zone of the suburbs in the city. Operated by individual companies, the buildings served their purpose as factories and storages. The renewal of the *Gasometer* to a primarily residential construction was associated with the demand to renew the close surroundings of this industrial area as well, therefore achieving to develop an area that is adequate for residential uses. Likewise, the surroundings of the high-rise in Graz also have to be remodeled and modernized to guarantee a high quality for the prospective residents or occupants. Both projects focus

Fig. 70: Architectural model

Holzbauer's design for „Gasometer D" differs to the other designs vastly. Here, the annex was erected in the center of the dome resulting in three spacious courtyards that contain several private gardens and recreational spaces (as depicted in the sketch).

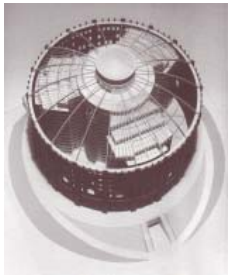


Fig. 71: Model of Gasometer D

The „three arms" of the annex reach out from the center and almost touch the historic walls, which were renovated on the interior side. Bright salmon stucco was attached to the old bricks of the dome.

Fig. 72: Pelikan factory in 1907

This picture shows the factory shortly after its construction in 1905/06. It used to be located in a very rural environment back then. A facility was placed in the center of the U-shaped factory building. The small park can be seen on the left of the picture.

Fig. 73: PelikanViertel in 1995

In the middle of the 1990's, the already abandoned factory compound was suddenly located in a rather urban environment with very good infrastructure, due to the addition of plenty new buildings in the area. Therefore it transformed into an urban development project.

on different forms of living respectively housing, but also include other appropriate functions like commercial zones, offices, or in my case, hotel rooms. Furthermore they are both centered on the architectural transformation of existing structures and situations. The appearance of the high-rise in Graz can be entirely altered, since the building is not protected by the law of monument conservation, whereas the Gasometer had to be preserved in its original form.

Pelikan Area Hanover

Like the *Gasometer* and the high-rise in *Goesting*, the so-called *PelikanViertel* in Hanover is a former factory edifice that now offers several residential and commercial spaces. The German manufacturer of fountain pens was founded in 1838 in Hanover. Being very successful for several decades, the company soon required a new production facility in 1906. German architect *Otto Christian Taaks* was assigned with the project, and designed a spacious compound that included the manufacturing facility, company-owned apartments, and a small park with living pelicans. Like the high-rise in *Goesting*, the facility itself was erected as a skeleton structure and was primarily built in reinforced concrete. Exposed red brickwork was attached to the facade and forms, combined with the visible use of white stucco, the final outer surface of the building. Similar to the high-rise, the appearance of the building is fairly plain and refuses the implementation of embellishing ornaments extensively. Only the representative ends of the U-shaped manufacturing facility include decorations in shape of the company symbol. Seven years later in 1914, the prosperous firm added two annexes to the north, which included a spacious hall. Finally after many years in 1991, the *Pelikan* factory compound was sold by the company, and was partially renovated and protected by the office for conservation of ancient monuments. In 1992, it was also subject to feasibility studies and became, as a result of that, a legitimate city district which was called *PelikanViertel* from that point on. These feasibility studies researched sustainable future uses for the area and resulted in the development of several masterplans that suggested a mix of office, residential and leisure functions. The 10ha big area with many historic buildings in the *Wilhelminian style*, with spacious open landscapes, and with a fabulous infrastructure, was the focus of the revitalization project. In the beginning, around 1992, this revitalization was started with the elimination of a majority of the old constructions. Historic buildings on approximately 4ha of the total area were protected by the law of monument conservation, and host nowadays many commercial facilities. On the other 6ha big area, however, the existing factory buildings were eliminated entirely. New houses for both residential and service functions

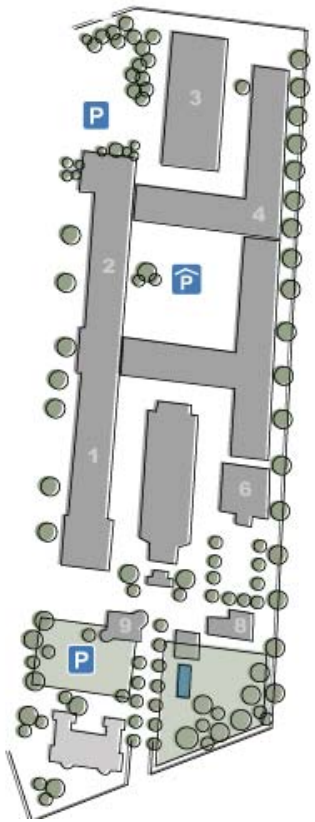


Fig. 74: Planning sites, Phase 1 - 1995 to 1999

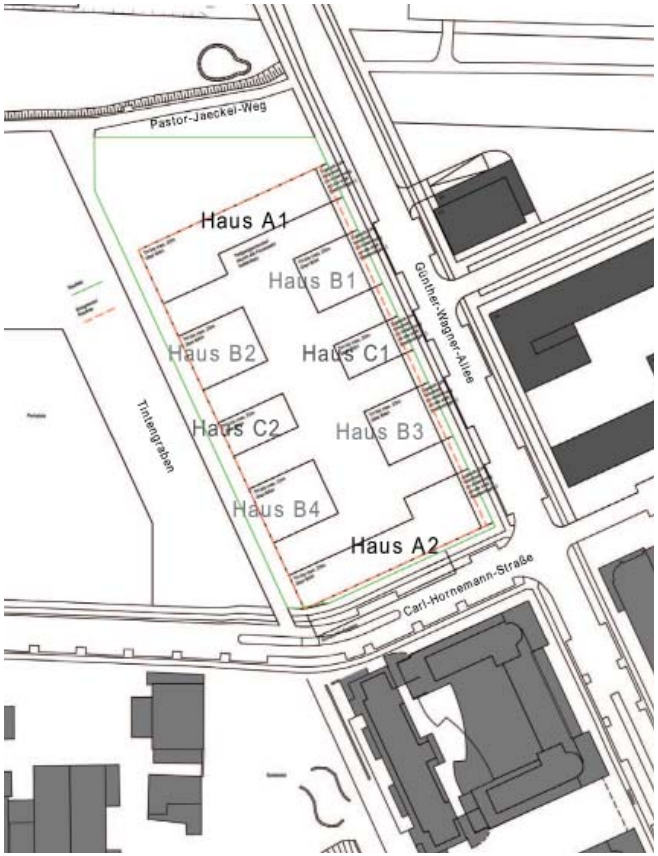


Fig. 75: Planning sites, Phase 2 - 2008 to 2011

were erected on this site between 1995 and 1999. Here, the focus was on integrating the new structures with the surrounding building density. As a contrast to the historic factory structures, the new design was built as blocks of edifices along the newly constructed main road. 162 new apartments were realized, which offer a fairly high quality of living despite their situation in a former industry area. Moreover, over 2000 jobs were created in the fields of insurance, financial and health services. In addition, the project included the planning of a 4-star hotel, which was implemented in the existing historic structure. These measurements mark the first planning phase of the revitalization project and were awarded with several architectural prizes in 1995, 1998, 2000 and 2001. The second planning phase of the *PelikanViertel* was started in 2008 with the

Fig. 76: Brickwork - stucco facade

This picture shows the historic facade of the building, which is protected by the law of monument conservation. Erected entirely as a brickwork wall, the facade was partially covered with white stucco.

Fig. 77: Historic facade

A 4-star hotel was integrated in the historic structure. Furthermore a boardinghouse called *Gästeresidenz PelikanViertel* is also integrated in one of the historic parts of the former factory building.

Fig. 78: Representative front

Fig. 79: Courtyard of the factory

These pictures show the old factory buildings, which were part of the 4ha area that was protected by the law of monument conservation. They were partially renewed interiorly, but the facade had to be preserved entirely. Some minor restaurations were undertaken in the early 1990's.

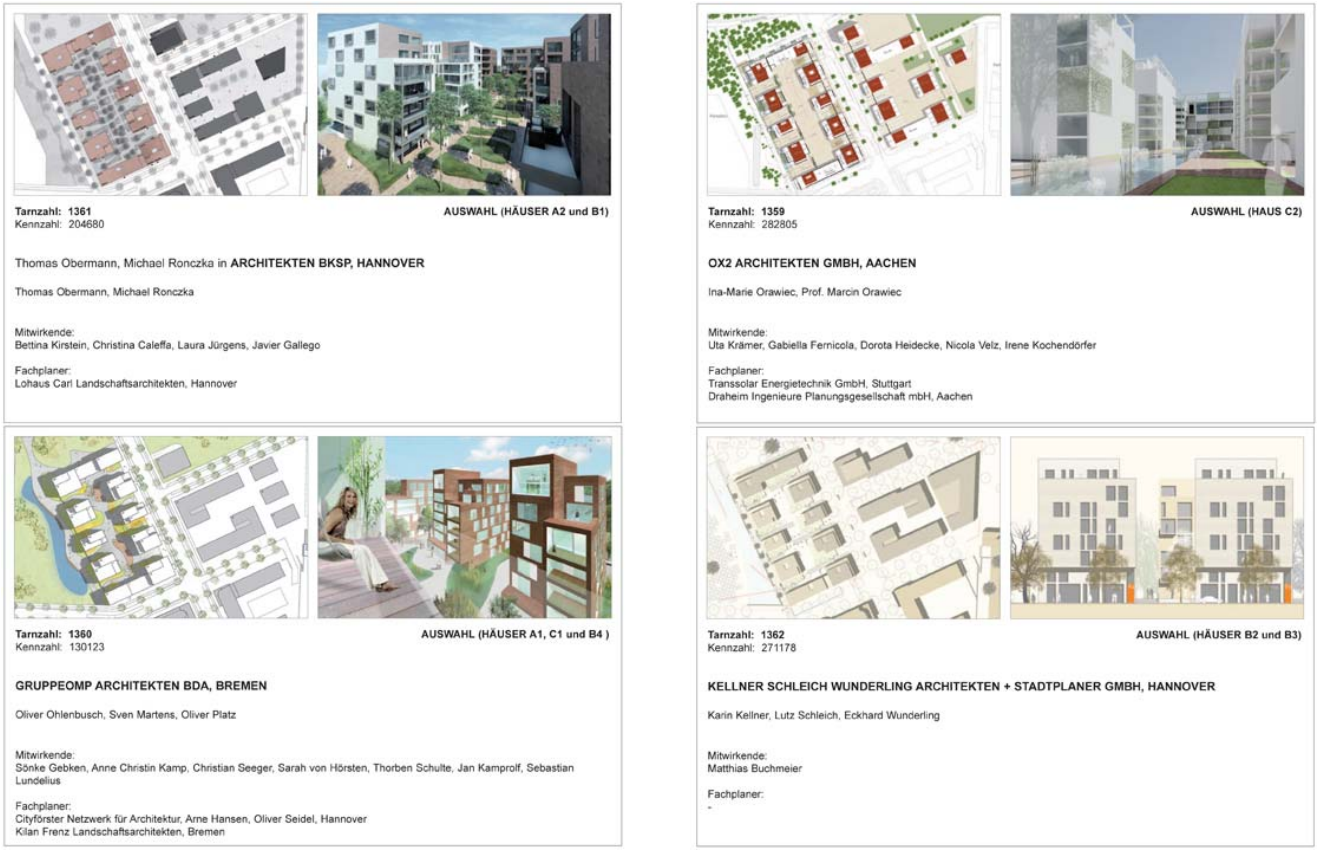


Fig. 80: Four architects won the international competition

announcement of an international architecture competition. The group of companies *Grundlach*, who bought the area, and the city Hanover itself worked together as the initiators for this contest. Many international architecture firms contributed their ideas and designs for this two-phased competition for the realization of primarily new residential buildings. Four architects - *OX2 Architekten* (Aachen), *gruppeomp GbR* (Bremen), *BKSP Architekten* (Hanover), and *kellner schleich wunderling architekten* (Hanover) - have emerged from the process as the winners in 2009. Each architect was assigned with the realization of one part of the whole site. The mixture of different architectural designs was intended to create a colorful neighborhood, which is characterized by diversity and urban interaction, and which offers different qualities for different target

groups. The construction of the new designs began this year (2011). Here, the main focus was to fill the remaining plots with houses for residential use. In accordance to the first planning phase, the emphasis hereby was to implement these new designs in the existing and to some extent historic urbanistic structure. Again, the task was not to solely provide spaces for living, but also include commercial- and business zones and gastronomy in the ground floors. The demand to include a daycare facility for children in this district was also fulfilled. The new apartments are required to enable many different living standards, and therefore offer a great variety of living. Both rented apartments and condominiums that differ for example in size, position, and quality correspond to the request to build medium to high-class living spaces.

Although the *PelikanViertel* is an entire city district, it still resembles my project in Graz to some extent. This urban design in Hanover is a very good example for the successful revitalization of an old and historic industrial wasteland. Again, here we have a former factory facility which was built a long time ago and which was sold and abandoned by the owner in the early 90‘s. The existing structure was renewed respectively filled with new functions like residential and commercial spaces. Similar to my project, the main focus was to remodel not only the existing buildings, but also the entire surrounding urban situation to provide an appropriate standard for the newly implemented uses. As a result of that, it represents, like the high-rise in Graz, an urban development project as well. The difficulty hereby was to integrate the new design with the surrounding building density - a challenge that I also have to face. Furthermore the main goals of the revitalization of the *PelikanViertel* correspond to the many aims that I‘d like to achieve as well. These include, for example, the reactivation of a former industrial site, the development of a new urban situation with high quality standards, the implementation of multiple uses into one building, and the conservation and improvement of the residential area. Constructed in the very plain industrial style of the 19th century with reinforced concrete and the characteristical brickwork, the *PelikanViertel* also resembles the first reference project mentioned earlier - the *Gasometer* in Vienna. All three constructions were designed to provide an appropriate space for their individual purpose (which was a mix of manufacture and storage), thereby being good examples for the architectural functionalism. Likewise to the *Gasometer*, the *PelikanViertel* too was protected by the law of monument conservation. Therefore the outer appearance had to be preserved and was not subject to any architectural alterations. This applies basically to all four domes of the *Gasometer*, and to the protected buildings on the 4ha in Hanover. However, my project in Graz is not protected by this law. Thus the appearance could be changed.

Fig. 81: The PelikanViertel today

This aerial photograph shows the *PelikanViertel* today. The second planning phase is not yet started on this image. The first planning phase can be seen entirely.

Fig. 82: Sheraton Pelikan Hotel

Being a part of the first planning phase, the 4-star hotel was integrated in the historic structure of the former factory building. The interior was renewed to a vast extend, whereas the outer appearance wasn‘t altered too much.

Fig. 83: Newly added glass roof

The historic facade was preserved to a great extent. The only major alteration of the outer appearance can be found on the roof, which was basically redesigned entirely. Elements from the past and present are combined to form a harmonious „symbiosis".

Fig. 84: Dining hall

The huge dining hall was integrated into the old structure by *Jestico + Whiles*. The original elements were preserved as much as possible.

Fig. 85: The Andel's Hotel integrated in the historic construction of the former mill located in the Manufaktura center

Andel Hotel Łódź

Another good example for the renewal of a historic factory facility is the *Andel's Hotel* in Łódź, Poland. It also deals with the challenge to combine the elements from the past and the present and to thus create a harmonious and adequate dialogue between the two different architectural styles. The old and fairly huge factory building which is located directly next to the Old Town, was originally used as a weaving mill and was built in 1878 by the textile tycoon *Izrael Poznanski* as part of a cotton factory complex. *Poznanski* immigrated to Łódź during the flourishing industrial era of the city. During that time, the city's rapid growth was a result of the prosperous development of industry and got its accurate nickname "Polish Manchester". The factory

was designed by the famous polish architect *Hilary Majewski* and soon became a very well-known industry monument. Likewise to the other reference projects, the compound was abandoned in the late 90's, and forgotten and empty for many decades. Between 2007 and 2009 the former cotton mill was transformed into an outstanding example of blending historic industrial architecture with modern design. The Austrian-Polish real estate company *Warimpex* worked together with the architects of *OP Architekten* and integrated a sophisticated 4-star hotel, the only one built in Łódź which is located directly in the Manufaktura shopping, arts and cultural center, into the historic structure. The hotel is called *Andel's* which is a reference to the city district *Anděl* in Prague, and which means „angel". It is under the management of *Vienna International Hotelmanagement AG* and is the fourth *Andel's* Hotel owned by this company. The revitalization of the historic structure is considered one of the largest urban revitalization projects in Europe of the last few years and was awarded with multiple prizes, like the European Design Awards 2009 for Architecture of the Year, or the 2010 Interior Design Awards in the category ‚Adaptive Reuse'. The leading architect *Wojciech Poplawski* of *OP Architekten* was assigned with this delicate task and worked together with the interior architecture firm from London, *Jestico + Whiles*, who has collaborated with *Vienna International* several times in the past and who designed the interior of all other three *Andel's* Hotels as well. Together, they renovated the huge and old industrial red-brick facility in accordance with the regulations for the restoration of historic structures. The main goal here was also to preserve as many of the original elements as possible. This transformation into a high-class hotel included 278 designer rooms and suites, 3100m² of conference space, a glass-enclosed event hall for 800 people with 1300m² on the roof, which is double floor high and acoustically separated from the rest of the building (one of the largest in Poland), and exquisite dining restaurants and bars with space for over 450 people. They basically redesigned the entire roof for this project. Huge freight elevators enable large items such as pianos or even cars to be placed in the event hall on the top floor. Many glass elements and skylights enable natural light to reach all of the public spaces, including the four-story atrium. The long and narrow guestrooms are equipped with furniture that was intended to make the rooms feel more spacious. The designers used textiles from the archives of the former factory and enhanced the colors. These brightly colored textiles embellish each individual guestroom and form a contrast to the historic brick walls. The original cast iron pillars support the vaulted red-brick roof. Three light wells cut through the ceilings with displays of ellipses, and each of them is lit with a changing colored LED, which forms an intense contrast to the existing brickwork structure as well. These wells also enable natural light from the roof to

Fig. 86: Event hall and pool

The conference hall on the roof is the largest in Poland and offers space for 800 people. The double floor high glass-enclosed swimming pool is visible from the outside and offers a vast panorama view over the city.

Fig. 87: The light wells

The light wells cut through the ceilings and enable a direct connection to the glass roof. Displays of ellipses encircle each opening in the ceilings and change the color frequently, therefore resulting in many different moods.

Fig. 88: Light well - LED display

Fig. 89: Light wells

The light wells are among the most famous renewals of this revitalization project. For this, *Jestico + Whiles* were awarded with the Interior Design Award in 2010.

reach the ground floor of the hotel and offer a direct view to the sky. However, one of the most outstanding renewals is the swimming pool on the roof, which is located in a former fire water storage tank, and which provides fantastic views over the city. The tank was built over 130 years ago in Manchester and was used by the Polish factory as a part of a fire extinguishing system. Directly underneath the pool are fitness and wellness centers and sun terraces. *Jestico + Whiles* integrated those new functions in the historic structure and achieved to create an atmospheric experience and simultaneously preserved and maintained the industrial character of the historic walls. One priority of the architects was to offer spaces which are human-oriented and which demonstrate the historical context of the former industrial facility. The old pillars and beams were preserved, and the over 100 year-old staircase was renovated to its original form. The outer appearance of the red-brick facade, internal bearing structures, and steel-brick ceilings were entirely restored during this revitalization project.

Like all other mentioned reference projects, this one too has its similarities to the high-rise in Graz. While the *Gasometer* in Vienna represents a complex of four individual buildings, and the *PelikanViertel* in Hanover an entire city district, the Hotel in Poland represents only one, but enormously large factory building. Similar to the other references, the hotel was also build in the end of the 19th century and reminds us of the industrial era of that time. Erected in red-brick walls and designed for the purpose of manufacture and storage, it too exhibits the spirit of the development of industry. Sharing the same fate like all other mentioned projects, the hotel lost its former function early in the 1990's and was abandoned for several years. After becoming an industrial wasteland, finally in the new century, new uses and ideas started to emerge. Despite the other two projects, the new function for the former factory building in Lodz was solely to provide high-quality guestrooms, and therefore to become the first 4-star hotel in the city. This corresponds partially with my project, since the high-rise is thought to be renewed not only for residential uses, but also for the use as a hotel. Consequently, the former cotton factory does not only share the same history, but also the same modern alteration that the high-rise in Goesting is going to face. It represents a good example of how to revitalize an abandoned factory facility and how to integrate an entirely new function as a contrast to the existing structure. Since its main renewal was primarily interior, the outer appearance of the hotel was unmodified. The old historic brick walls were preserved in its entirety. Therefore this project does not serve so much as an example of urban revitalization as the previous ones, especially the *PelikanViertel*. But it illustrates the

successful transformation of an old and abandoned industrial wasteland.

Altogether these three reference projects are thought to aid in the development of my design by giving me examples and inducement on how to revitalize former factory buildings. They all share a similar history and were transformed into similar functions, either residential with commercial zones or mere guestrooms in a hotel. My project has the same overall aims like these references (reactivation of a former industrial site, development of a new urban situation, implementation of multiple uses, conservation and improvement, integration of new functions,...), which illustrate the realization of those goals successfully.

Analysis of the Surroundings

schematic section

Fig. 90: Simplified section of the high-rise with a focus on the surrounding environment

The detailed analysis of the planning area and its surroundings is necessary for achieving an impression of the spatial situation and local conditions. An evaluation of the site aids in finding design ideas and helps in getting inspiration. As mentioned in the design characterization chapter, the building is located between two fairly different environments. This can also be seen in the land utilization plan. On the one hand, the front side of the high-rise is facing towards the heavy frequented street. Primarily commercial buildings with residential apartments in the upper floors are located along this street. Behind those houses there are several industrial and commercial buildings that do not include any residential functions. This results in the lack of green backyards or squares and characterizes this area as a main business zone. On the other hand,

Fig. 91: Commerce and industry

The close surroundings of the planning site can be roughly divided into two main functional areas. The one above shows the industrial zone with its many commercial buildings. Also visible on this picture is the private society of allotment gardens.

Fig. 92: Residential and business

The district also contains several residential buildings that are mainly built together and thus form closed residential areas with private parks and other green gardens. However, these two different environments do not occur in its purity, but intermingle with each other.

Fig. 93: Aerial photograph

This image pictures the urban structure of the planning site. In accordance with the urban space plan, it also displays the railroad and the fairly parallel *Wiener Straße*, which both seem to intersect the entire neighborhood, very clearly.

Fig. 94: Grazer Muehlgang

Along with the public pond in the park, this old river presents the only natural waters in the area. A total of 12 hydropower plants were operated along this creek. Between 1903 and 1905, the power plant *Viktor Franz* was founded, which is still in operation today.

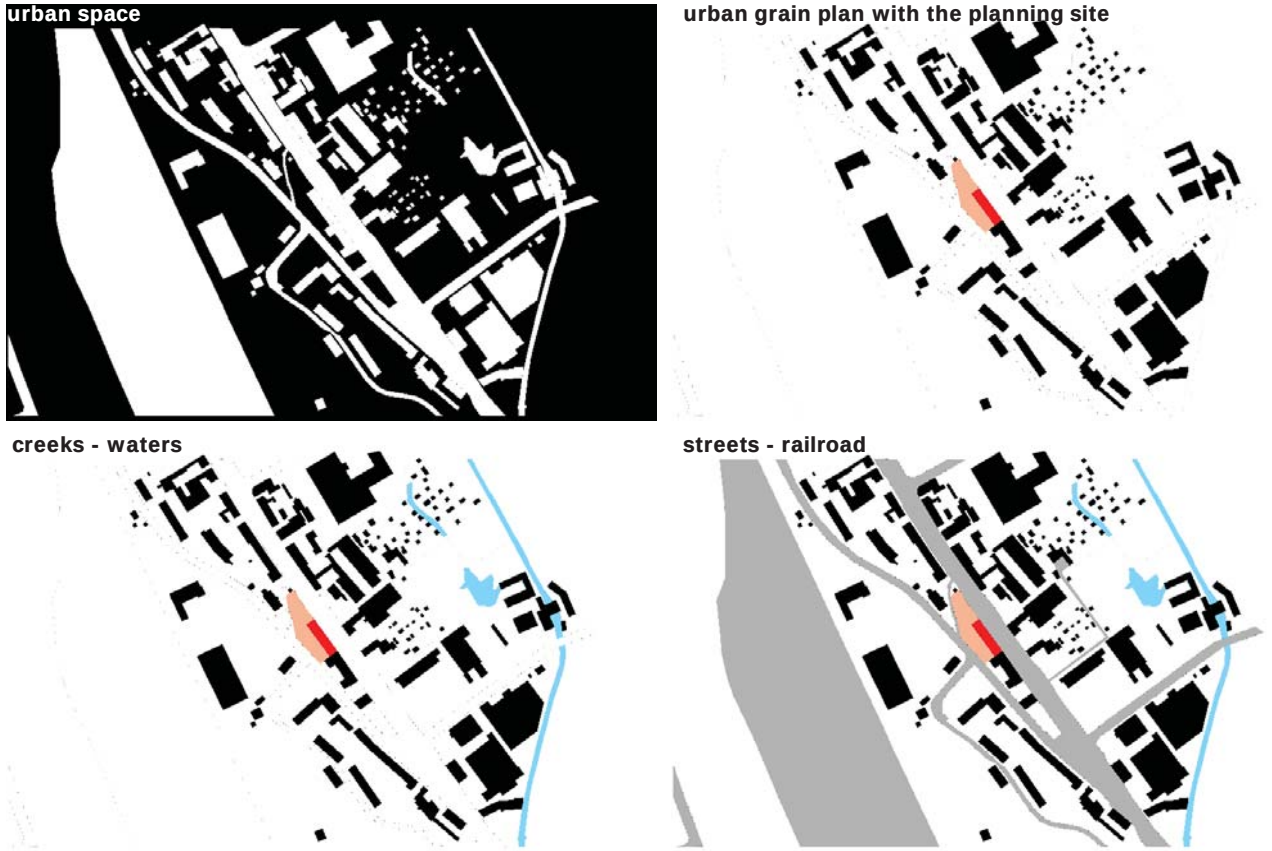


Fig. 95: Overlapping of the individual functional aspects

the backside of the high-rise faces towards a mixed zone with a primary focus on residential uses. Several high-rise apartment buildings and housing developments are located on a slight slope and share this mainly green area with some commercial houses. This quieter area contains many green gardens and courtyards and is vegetated with multiple large trees that form a natural acoustic wall against the loud railroad. These two different environments will somehow influence the design of the building.

In order to comprehend the situation in its complexity, the entire surrounding area is divided into its individual functional parts or aspects. The overlapping of the individual aspects offers an image of the entire situation, in which one can survey the interaction of these different functional parts. The urban space plan

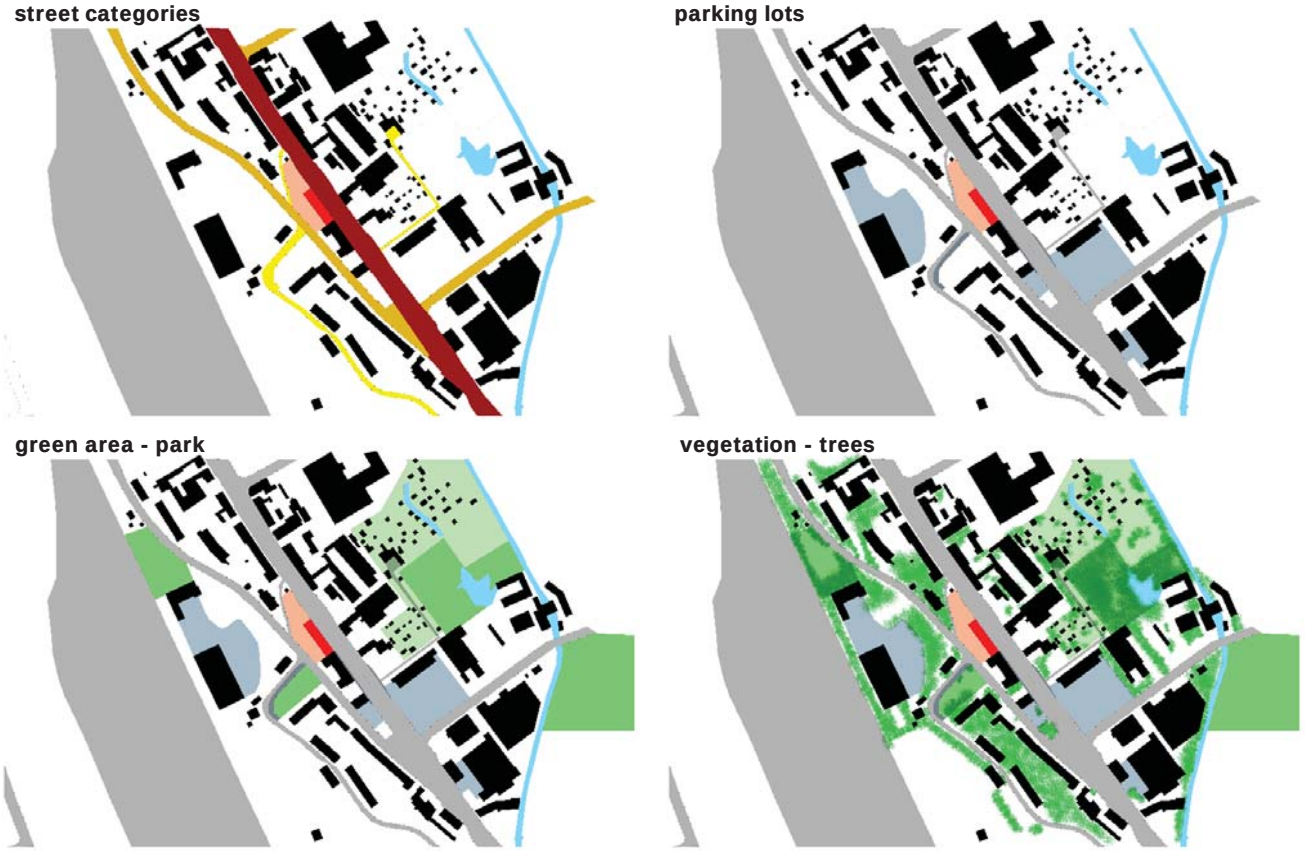


Fig. 96: Overlapping of the individual functional aspects

provides an understanding of the available empty space that is not filled with any constructional measurements. It shows us, that the majority of the buildings in the area are located along the main road. If you invert the plan, then you'll get the urban grain plan, which shows the urban structure of the district. Although Graz basically developed into a concentric city structure, this particular planning area reminds us more of a district with ribbon development. The *Wiener Straße* represents hereby the center of this area and most of the buildings are arranged along this street. The planning site of this diploma thesis is marked in orange and red in the plan. The next layer of aspects depicts the rivers and lakes in the area. There is one creek that runs through the whole city - the *Grazer Muehlgang*. In this plan, the river passes the electric power

Fig. 97: Parking lots in the area

There are multiple possibilities to park cars in the entire district. Together with the parking lots along the streets and roads, which are not with costs, many private parking lots and residential parking areas offer abundant space for cars.

Fig. 98: Residential parks

Several parks offer recreational spaces for the inhabitants of the district. The biggest green area can be found next to the pond and has multiple large trees. A sports club with a soccer field is also within walking distance from the planning site.

Fig. 99: Large trees

The trees do not only embellish the area and function as natural elements for the residential buildings, but also form an acoustic wall against the railroad. Without these natural measurements, the sound impact would be too loud for residential edifices.

INFRASTRUCTURE

Services

Taxi station
E-werk Goesting V. Franz Gmbh
Regeltech Austria Gmbh
Post office 8051
CS-W Consulting Services
SAM Metallverarbeitungs GmbH
Reha Druck GmbH
Tabak Trafik
Abio Nova Hygiene Service GmbH
Meinhaus Bau GmbH
SteinerBau GmbH
Police
MHG Metallbau Glawogger
OSY Versicherungsdienst
Schachner Peter Immobilien
OK Service Philipp Eger
Energy Services GmbH
Brennstoffe Kohlenhaus Zöhrer
KIS Personalservice GmbH
Travel Agency Otto

company of Goesting. Adjacent to the plot of this company is a small private park which has a public pond in the center. This pond is accessible through a road next to the company buildings. Also shown in this plan is a not too long exposed part of an underground tributary of the *Muehlgang*, which is located within a private society of allotment gardens and which attempts to embellish this club by offering this natural element along with many large trees. The next layer shows the transport routes of the planning area. The highly frequented and very representative thoroughfare cuts through the district and forms the center of it. Small minor roads that lead into the individual residential areas branch off this broad street. The large railroad system is located in the west behind a slope and runs parallel to the *Wiener Straße* through most of the city. The plan of the street categories tries to illustrate the importance of each road. The railroad is not included in this comparison, since it is visibly disconnected with the actual planning site due to the slight slope and the heavy vegetation and large trees. Nevertheless, it still is acoustically present, which will be described later on. The main street of the area is the *Wiener Straße*, which runs through the entire district of Goesting. The two different directions of the street are separated by an approximately 2-3m broad band of grass, which partially contains small trees. Each direction has two lanes. As previously mentioned, this street is the most frequented (25000 to 29999 cars a day) and most representative in the area and is therefore marked in red in the plan. Marked in dark orange are the streets which branch off the *Wiener Straße* and which lead into the individual residential areas. They are not as frequented and only have one lane for each direction. The plan also contains minor roads marked in light yellow, which are in this particular case privately owned roads or dead end streets with very little car frequency. The next layer of aspects shows the abundant parking lots. The whole site offers several parking spaces, which are mostly privately owned by the grocery stores in this area. Others belong to the housing developments or other residential buildings. Furthermore there is the possibility to park along the main roads of the district. Altogether parking spaces are available in abundance. The next plan depicts the public and private green parks. The private society of allotment gardens, which basically also portrays a green area is marked in light green, whereas all other parks, which either belong to individual housing developments or other clubs or unions (for example the small horse ranch at the *Josef-Pock Straße* next to the railroad) are marked in solid dark green. The next layer that is added on top of all others represents the vegetation and trees in the area. It shows very well (like the section in figure 91), that the majority of the trees occur in the residential part of this district. The large trees are either located in the many private backyards or courtyards of the apartment buildings or in the parks. The commercial and

Infrastructure

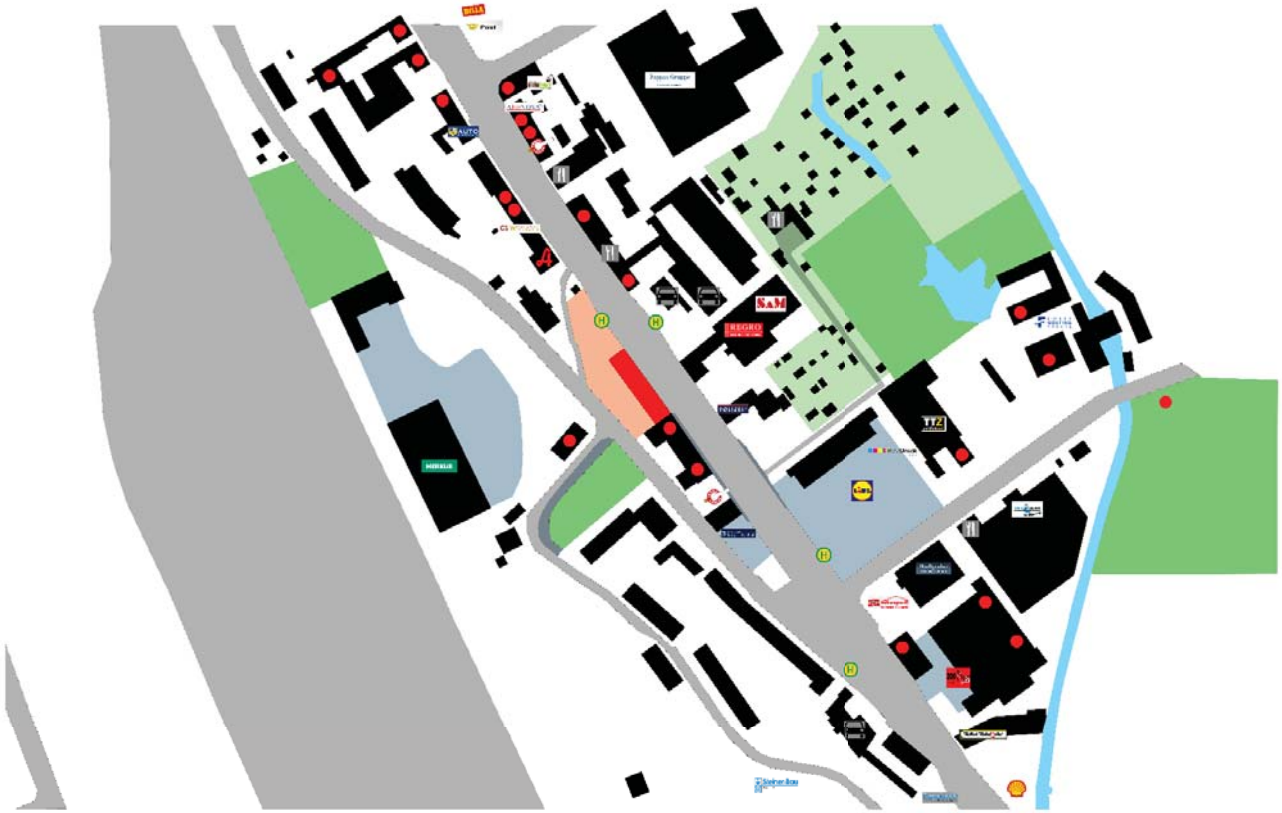


Fig. 100: Infrastructure in the district with many services, commercial institutions and industry buildings

industrial area to the east does not have this abundant amount of trees, except in the private garden society and in the two fairly large parks.

The picture above shows the very good infrastructure of the area. In fact, the planning site is situated within a district with a fabulous supply and offering of several different services. Adjacent to the plot itself is a bus station for the public means of transport, which enables a direct connection to the city center and to the shopping mall in the north. The train station is also easily reachable by bus. Furthermore, a taxi station is just around the corner providing taxis at all times. Besides that, there are at least three major grocery stores (*Billa*, *Lidl*, *Merkur*, and a little farther away *Interspar*) within walking distance. Many different restaurants

Friseur Haar genau
Friseur Elfi

Trade and Commerce
Werkzeugmarkt
Zoo Muser
Bankhaus Krentschker & Co AG
Grazer Pfandhaus-Nord
Regro Elektro Grosshandel
Idee & Werk R Tauder GmbH
Radlgruber Werbegeschenke
Musikinstrumentenhaus Grießl

Grocery Stores
Merkur
Lidl
Billa

Health
Janusch pharmacy
Dr. Faissal Keilani
Bodymed. Apfaltrer
Dr. Manfred Riehs
Dr. Anton Franolic
Dr. Reinhard Maronnek

Car sales, repair shops and car components
Reifen Ruhdorfer
Shell Tankstelle
KFZ Service Mürzl + Kohlbacher
KFZ Reparatur Verkauf Baldasty
Auto Achatz Kfz Werkstatt
Pappas Gruppe
Konrad Wittwar Gmbh
Autohaus Mercedes Benz

Recreational
Tanz Theater Zentrum Graz
Go4sun Sonnenstudio
Sportstätte Viktor Franz Platz
Judo Kreativ

Food, Restaurants and Bars
Cafe Merci
Nightclub Lili Marlen
Restaurant Langensiepenstüberl
Fleischerei Bernhard
Giano Pizza

Fig. 101: Apartment building

This image shows a typical high-rise apartment building in the quieter residential zone west of the planning site. These buildings are colored orange in the plan to the right.

Fig. 102: Commercial constr.

Colored in blue are the constructions, which are used primarily as commercial or industrial buildings. The picture shows the biggest company in the area, which is located far to the north adjacent to the private garden society.

different functions of each building

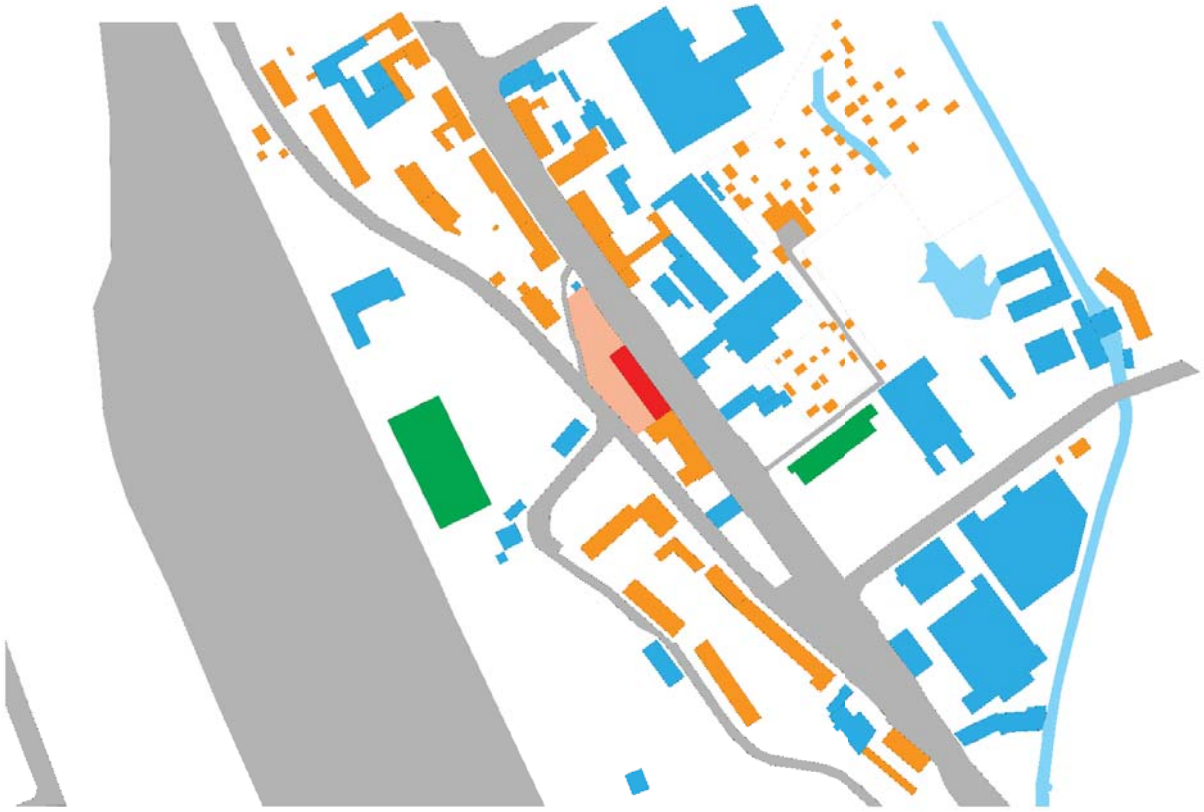


Fig. 103: The buildings in the planning area with its different functions

offer a great diversity of food. Directly across the street of the planning site, you can find at least two taverns. Moreover, five medical doctors have their clinical praxes next to the main street. In addition, you also find a pharmacy directly adjacent to the triangular plot to the north. Summed up, as the list implies, the very sustainable planning site is located in a fantastic urban situation for residential uses and/or for the use of a hotel.

The plan above illustrates the different main functions of each building. This reinforces the fact that we have already seen, for example, in the vegetation - trees plan of page 49. Again, the planning site of the project is in the center of the plan and marked in light orange color (the existing high-rise being colored in red).

building heights

Fig. 104: The development of the building heights

The constructions in orange are filled with primarily residential uses and are mainly located on the quieter west side of the street. The buildings in light blue color represent commercial or industrial buildings and are primarily located east of the street. Labeled in green are the two main grocery stores in the area.

The illustration on this page clarifies the different heights of each individual edifice. According to the color scale, the existing high-rise is - along with one other high-rise apartment building south of it - the highest construction in the entire area, and overtops almost all of its neighboring buildings. However, some of the high-rises southwest of the planning site are situated on the slope and therefore tower the existing high-rise marginally. Nevertheless it is without doubt the construction in the area, which is clearly visible from a long

Fig. 105: Highest building

Buildings that are located on the slope in the west partially overtop the high-rise, although their constructional heights are lower than the height of the high-rise. However, their distance is too far to shadow the existing edifice on the planning site.

Fig. 106: Great view from the roof

The neighboring buildings to the east are all lower and thus enable a fantastic far view of almost all floors of the high-rise. There is only one other building in the district that overtops the high-rise as seen in the image above.

Fig. 107: View - second floor

The first two floors do not provide such a scenic view as the ones above, but still enable to overlook the neighboring buildings. The image shows the electronic wholesale on the opposite side of the street.

Fig. 108: View from the third floor

The backside of the building offers in comparison to the front a not too far view due to the slope and the many natural trees. This is an advantage in this case though, because the wide railroad would otherwise be visible.

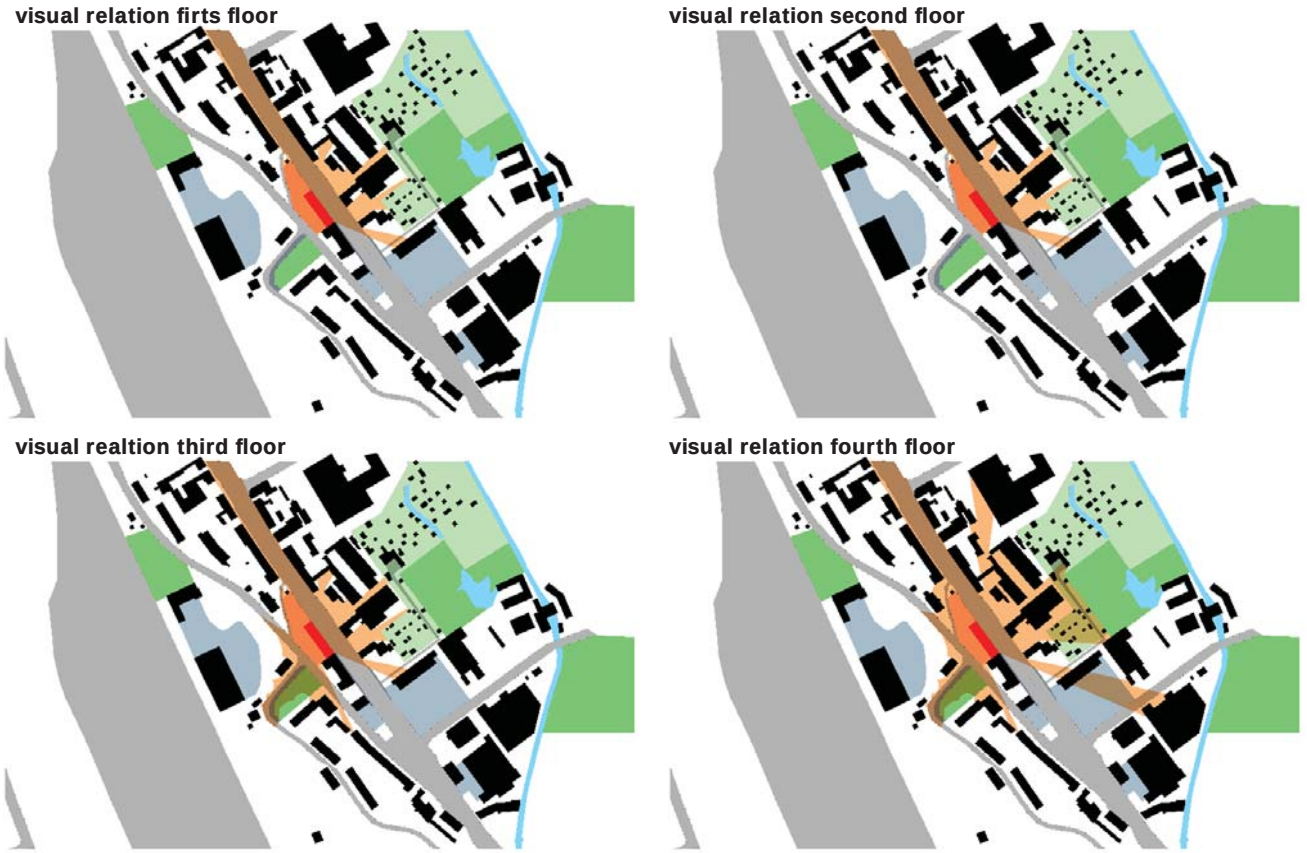


Fig. 109: Visual relation of the individual floors

distance, and thus it is also for sure the most representative building.

The following images on these two pages demonstrate the visual relation of each individual floor of the high-rise with the surrounding environment. As it is the case in almost all floors, the best views are available from the front side of the building to the east, due to the fact that the backside faces the slight slope, which prevents a far view. In this case however, the slope is very convenient, because it obscures the view to the railroad. The first and second floor offers approximately the same view. Only the parking lot in the backyard, and, to some extent, the road and large trees are visible from these first two stories from the backside. The front side, however, of the first and second floor offers more relational views. There, you can see very

Fig. 110: Visual relation of the individual floors

far along the main street and almost as far as to the society of allotment gardens in the east. Although the maximum view on the third floor resembles that of the first two floors, the backside of the building offers in comparison a farther outlook. The third floor overtops the road level and enables an entire overview of the neighboring park. The backside of the fourth floor grants a similar outlook as the one below. The front side however, overtops most of the lower surrounding buildings and therefore provides a fairly good overview of the structures on the opposite side of the street. For example, you can see the private garden society and even as far as to the business compound next to the *Zoo Muser* in the southeast. Beginning with the fifth story, all surrounding buildings to the east are below this floor. Therefore you can see almost everything and as far as to the adjacent districts *Andritz*, *St. Veit* and even *Mariatrost*. Anyways, the views from the backside of these floors differ slightly. As the images illustrate, the fifth and sixth floor share the same outlook to the southeast. The sixth floor however, provides a better view to the northwest. Finally, the last story of the building enables an overlook of almost everything of the closer surrounding environment and offers the best view to all sides of the building. This advantageous visual relation primarily of the last three floors explains the spatial distribution of the former

Fig. 111: View from the fifth floor

Beginning with the fifth floor the front side provides a panorama view over the entire surrounding environments and adjoining districts in the distance. There is no building which would block the view.

Fig. 112: View - seventh floor

This image was taken on the last floor of the high-rise and illustrates the fabulous overlook over the district, which is very suitable for prospective apartments. The former factory had all its major office and conference rooms in the last floors because of this reason.

Fig. 113: Concrete retaining wall

Due to the even-leveled property of the planning site, the slope requires a concrete retaining wall, as seen on the picture above, to hold off the earth thrust of the embankment.

Fig. 114: Embankment - north

The embankment on the northern triangular parcel descends both to the center of the parcel and to the north to the outpost of the electric supply company. From the *Josef-Pock Straße*, a narrow pedestrian path leads down to the *Wiener Straße*.

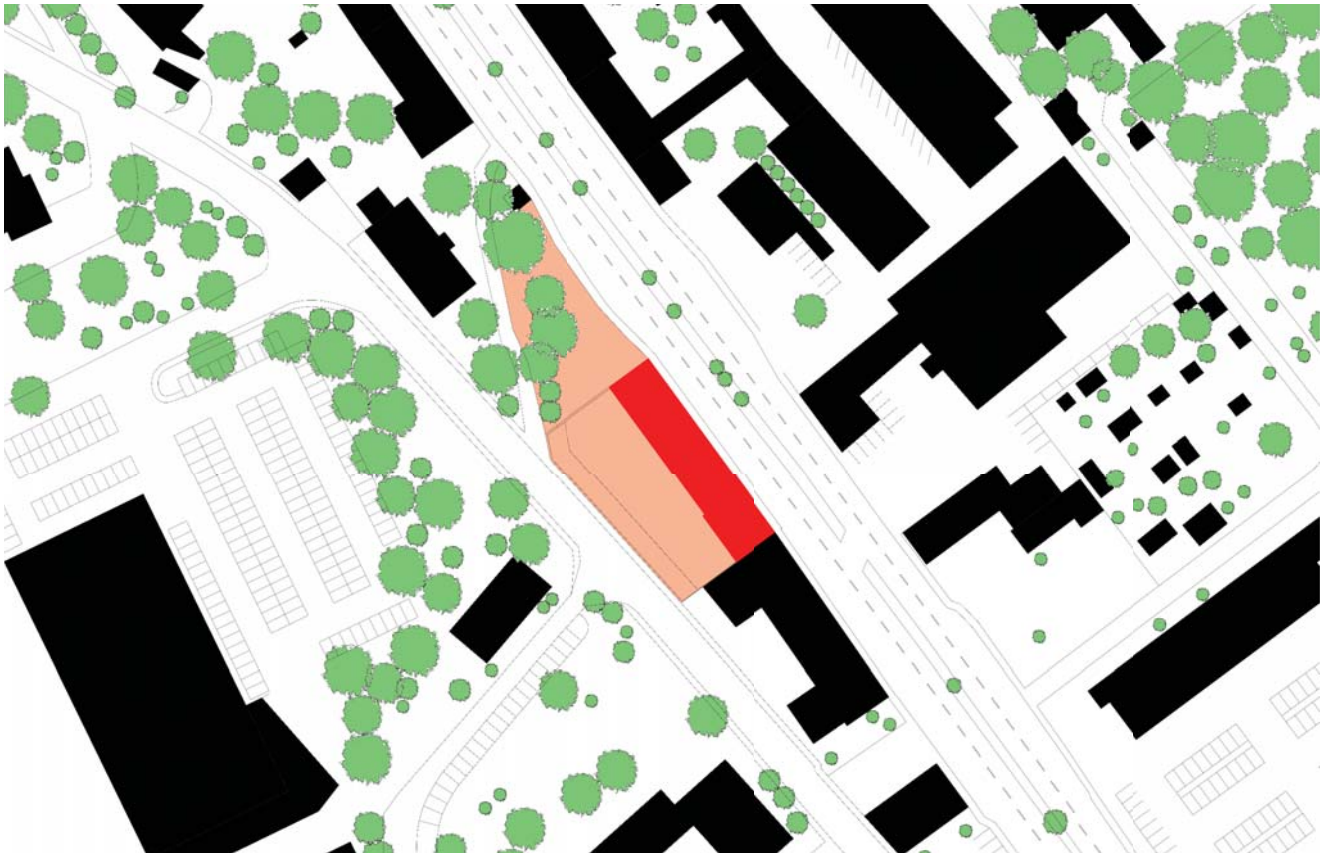


Fig. 115: Closer surrounding environment of the planning site and approximate location of the trees

factory building, which had many office and conference rooms in these floors.

The plan above shows a closer look of the immediate surroundings of the plannning site and the roughly positioning of the large trees. The actual site with the existing high-rise is also visible and marked in a red color. As illustrated in the plan, the plot itself consists of the two individual parcels, which were combined as one lot of land in 2006. They are both evenly leveled, situated along the street and they are dug into the slope to the west, as seen in figure 91. Therefore the property boundary on the backside (being the side of the plot to the west that does not run along the *Wiener Straße*) features a supporting wall of concrete, which holds off the ground soil of the slope, and which was used for the corrugated roofs of the parking lots. This

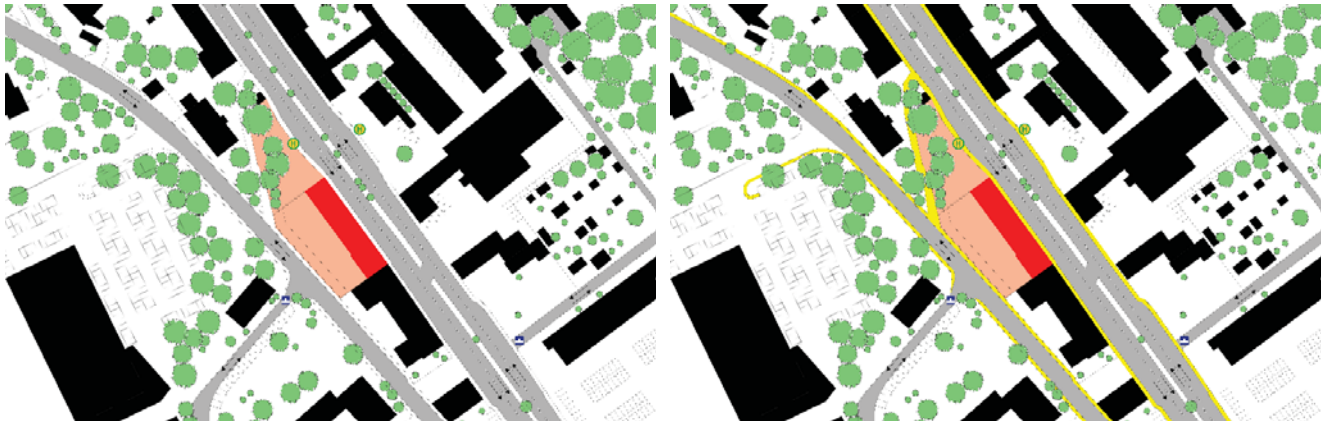


Fig. 116: Transportation routes - cars and pedestrians

wall also borders on the pedestrian sidewalk of the *Josef-Pock Straße*. Along the backside of the northern triangular parcel, there is not such a retaining wall. Thus the slope descends gradually with a very steep decline towards the center of the plot. A narrow pedestrian path (*Reinbacherweg*), which connects the road (*Josef-Pock Straße*) on the backside of the building with the street (*Wiener Straße*) on the front, is on top of this embankment, which has its highest point at the road, and which also descends to the north along the plot boundary, so that it is at the same level with the *Wiener Straße* on its most northern end. There, you can also find the tiny outpost of the electric supply company. In the south, the plot borders to the neighboring property with the U-shaped 4-story apartment building.

The images on this page depict the transportation routes and walkways in more detail. The planning site is basically bounded by the street, the road, and the pedestrian path which connects both of them. The main transportation route of the entire district is, as previously mentioned, the central and linear thoroughfare. The road on the backside is one of the many branches of this street and connects the building developments in this area. The planning site is only accessible by car from the street, because the elevation jump in the terrain caused by the concrete retaining wall makes an access from this side currently impossible. Moreover, the property can presently only be reached from the direction of the street that leads south towards the city center. The other direction leading north to the city limit does not contain a turning lane yet, which would enable cars coming from this side to enter the plot directly. Pedestrians, marked in yellow in the second image, commonly walk along the street and roads and do not have own walkways, except this short con-

Fig. 117: Reinbacherweg

The connection between the road to the east and the street to the west of the high-rise, which is only accessible by pedestrians, is in fact part of the dead-end street called *Reinbacherweg*. This walkway runs along the northern parcel of the site.

Fig. 118: Josef Pock Straße

Currently there is no possibility to reach the site by car, because of the jump in the terrain, which is approximately 3 to 4m high. Seen here is the *Josef Pock Straße* which borders the planning site and which runs almost parallel to the main street.

Fig. 119: Wiener Straße - north

The major sound impacts in this area are produced by the highly frequented main street. This picture shows parts of the triangular parcel to the north with the bus station and the outpost of the electric supply company.

Fig. 120: Wiener Straße - south

The main street has two separated directions, with two lanes for each direction. Currently there is no turning lane on the lanes leading north. Therefore only the direction adjacent to the planning site provides a direct access by car.

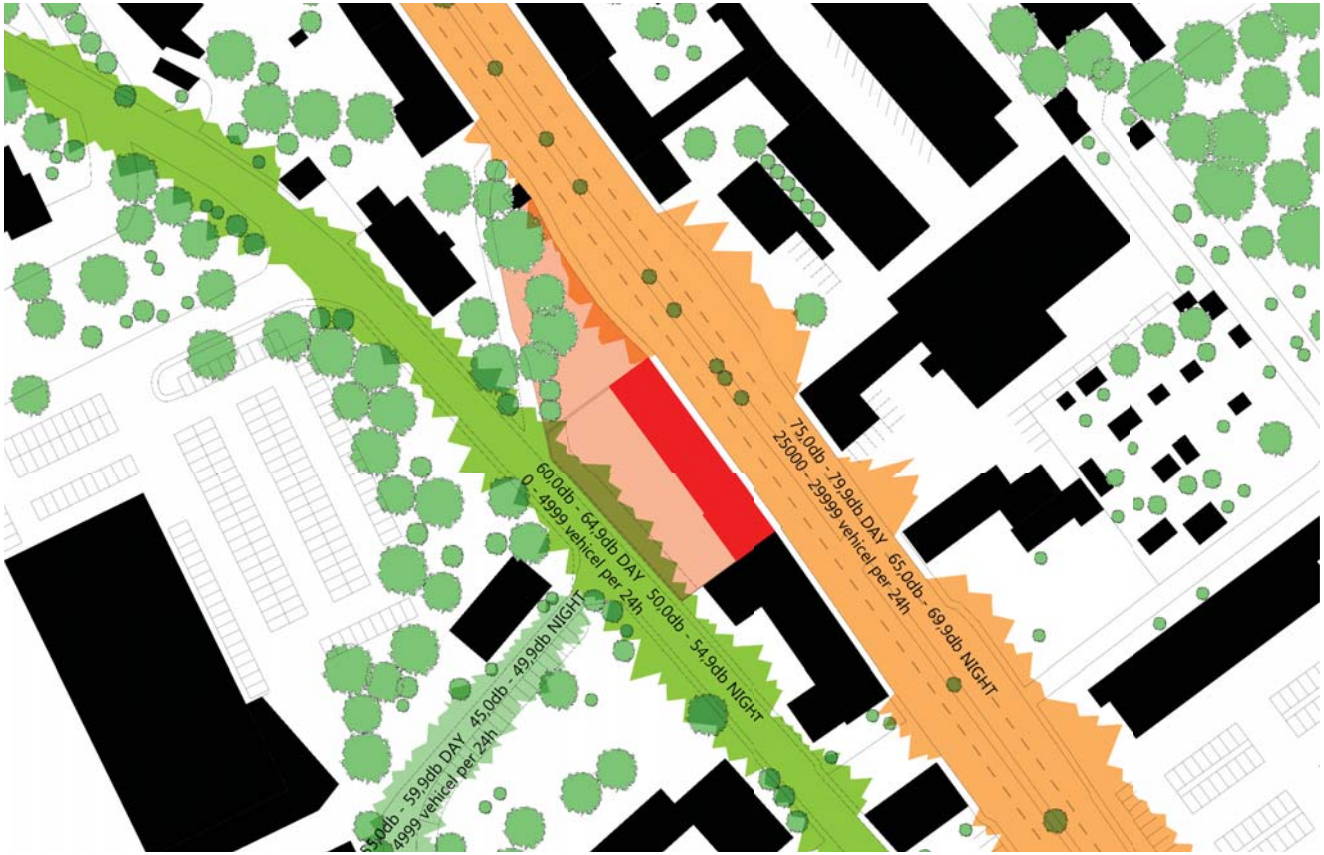


Fig. 121: Noise development of the streets

nection between the road and the street.

The noise development of the immediate surrounding environment is a huge topic for the project, since the planning site is located between two major producers of noise - the streets bordering the site, and the railroad. The major sound impact comes from the *Wiener Straße* and hits mainly the front facade of the high-rise. 25000 to 29999 cars per 24 hours cause a noise emission of 75 to 79,9db during the day, although the equivalent continuous sound pressure level for urban residential areas should not exceed 55db at daytime (and 45db at nighttime) according to the *OENORM B8115-2*. The *Josef-Pock Straße* does not produce that high amount of sound intensity, but it is still higher than the prescribed demand allows. This results in the

Fig. 122: Noise development of the railroad

request for the exterior walls and the facade to fulfill a certain sound insulation. The graphic on this page illustrates the sound impact of the second main noise producer - the railroad. As the image implies, most of the noise is absorbed by the natural conditions of this area. The slope and the abundant large trees to the west of the planning site decrease the sound volume, so that it barely reaches the east side of the *Wiener Straße*. Nevertheless, the existing high-rise and the whole site are still acoustically influenced by the railroad. Here, the noise mainly hits the backside of the high-rise. This impact is, however, already reduced to a level which is below the sound volume of the streets. Therefore it does not additionally demand a specific sound insulation, and will thus be swallowed by the measurements for the insulation of the street noise too.

Fig. 123: View to slope from build.

Even from the highest point of the building, the railroad, which is in fact not too far away from the planning site, cannot be seen due to the slope and the abundant vegetation in this area.

Fig. 124: Railroad

The railroad produces a harmful volume of noise. Many natural and constructional measurements, like an old noise protection wall along the rails, reduce this sound volume to a harmless level and thereby enable the arrangement of several residential buildings in a closer distance to the rails.

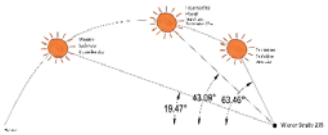


Fig. 125: Elevation angle - sun

This sketch illustrates the different elevation angles of the sun on the four characteristic days of the year. The abstract distance from the sun to the earth is also incorporated in this sketch. Therefore the sun is the closest to earth at the summer solstice.

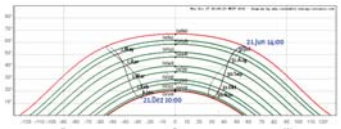


Fig. 126: Diagram - sun's orbit

This diagram depicts the sun's orbit in a different way. The red lines are the two solstices. The azimuth is on the x-axis, and the elevation angle is on the y-axis. The green lines are arranged in four pairs and represent the first and last day of the each month.

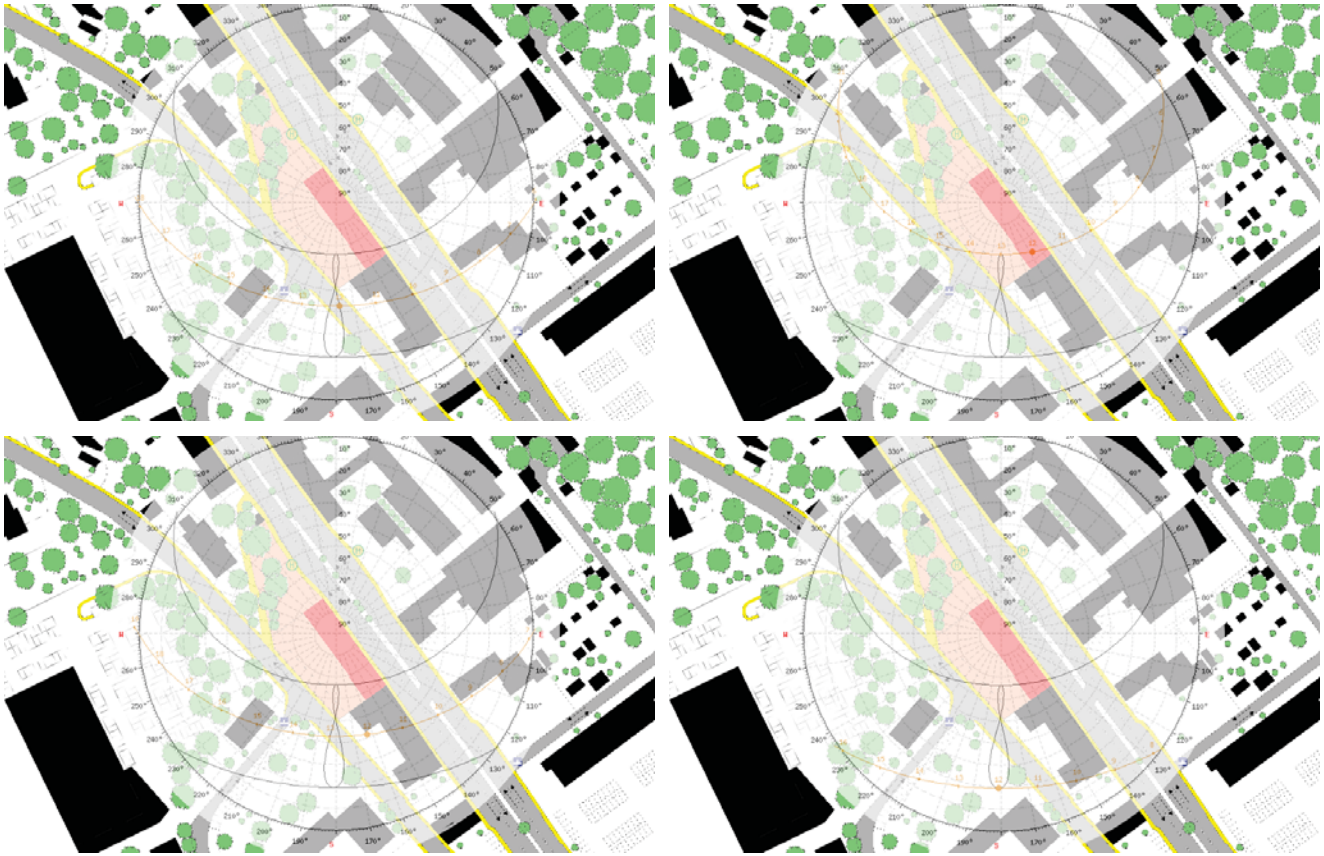


Fig. 127: Sun diagrams on top of the planning site

The sun is a further crucial factor that influences the design of the project. For a proper assessment of the situation, the four characteristic positions of the sun (spring equinox - 20th of March, summer solstice - 21st of June, autumnal equinox - 23rd of September, and winter solstice - 21st of December) are consulted for the exact geographical location of the planning site. Each of the four positions is represented by an image above, where a solar diagram is placed geographically sound on top of the plan of the site. Each diagram consists of an outer circle, which is subdivided into angles with increments of ten degrees, and which has its center point exactly over the high-rise building colored in red. These degrees represent the azimuth of the sun, which is the angle between the horizontal projection of a fictitious line between an observer (in this case the high-

rise) and the sun, and the reference value, which is in this case always pointing north. Inside the outer circle are eight smaller circles that all share the same center point. These circles represent the elevation of the sun. Each of them stands for an elevation angle, and the interval between them is in increments of ten. The outer circle itself marks an elevation of 0° and the innermost circle marks an elevation of 90°. Furthermore, there are two black curves and one orange curve in the diagram. The two black curves represent the sun‘s orbit of the summer solstice (the upper curve) and winter solstice (the lower curve). The orange line illustrates the actual sun‘s orbit of each of the four measured days. Thus this line is exactly on top of either the upper black curve on June, the 21st or the lower black curve on December, 21st. This orange line is subdivided into the daylight hours of the day and intersects with the outer circle on sunrise (east) and sunset (west). For all four graphics, twelve o‘clock at noon was taken as the time of the day. A small solid circle on the orange line at twelve o‘clock demonstrates the sun. Now with all these aspects of the diagrams one can see the exact position of the sun at the exact time of the day, and thus understand the direction of the sunlight.
On all four days, the high-rise is exposed by natural light primarily from the south. The front side of the building gets most of the sun in the morning and the backside of the construction is exposed to the light mainly in the afternoon. On March, the 20th - the day of spring equinox - the front facade of the high rise is hit by the sunlight, which has an elevation of about 43,09° degrees, from sunrise at 06:02am until approximately 10:00am. After the sun passes the windowless southern narrow side in the south, it then moves slowly to the backside of the high-rise in the west and provides sunlight from approximately 11:15am to sunset at 06:10pm. Therefore the building gets direct sunlight on this day for about 12 hours and 8 minutes. On June, the 21st - the day of summer solstice - the front side is exposed from sunrise at 04:02am to approximately 11:30am. Then the sun passes the southern side and moves to the backside and exposes it from about 12:30am to sunset at 07:57pm. This is the day with the longest daylight and exposes the high-rise for 15 hours and 55 minutes with a very high angle of 63,46° degrees. The other equinox on September, 23rd has about the same elevation angle as the spring equinox with 43,09° degrees. In the morning, the front facade is hit by sunlight from sunrise at 05:45am to around 10:45am. The sun then wanders to the back of the building and provides light from about 11:50am to sunset at 05:55pm. Therefore the high-rise is exposed to light on this day for circa 14 hours and ten minutes. On December, the 21st the sun has a very low angle of only 19,47° degrees. The front of the edifice is getting light from sunrise at 07:41am to about 09:00am and the backside gets light from 10:00am to sunset at 04:11pm, making this the day with the shortest daylight.

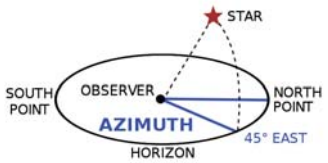


Fig. 128: Azimuth

The line between the star and the observer is projected on a horizontal reference plane (horizon). The reference vector points to the north. The angle between the projection and the reference vector is called azimuth.

Fig. 129: Sunlight on the backside

The front and backside of the building get most of the sunlight during a day. The narrow side to the south is totally exposed to the sun as well. The representative narrow facade to the north gets the least amount of natural light.

Fig. 130: Planning site with the two parcels

The previous chapters describe the current situation of the planning area thoroughly and set the foundation for this chapter, which attempts to find alternative and sustainable future uses for the high-rise. Here, two specific transformations that already emerged from the research as very viable and seminal are taken into consideration - the implementation of residential apartments and the realization of some sort of hotel, preferentially an extended stay apartment hotel.

For both functions the location of the project reveals itself as very appropriate. The existing high-rise can easily be altered due to its flexible structure and offers therefore a fantastic basis for integrating new uses. As explained in the first chapter, the main load bearing structure of the edifice is primarily at the facade of

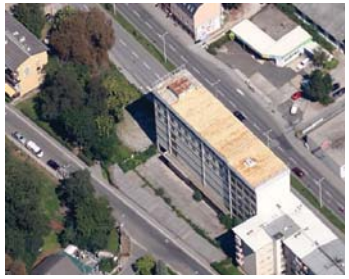


Fig. 131: Aerial view of the site

The current existing building can be extended both to the north (on the triangular parcel), and to the west (on the former parking lot). The simple geometric form and the linear orientation of the high-rise allow many possibilities for the new design.

Fig. 132: Property plan - 1957

The property plan from 1957 divides the area in individual plots and determines their borders. Back then, the triangular parcel was a plot on its own, but was never covered with buildings. Now that it is annexed to the bigger parcel to the south, it will be included in the new design.

Fig. 133: Housing projects chart

In 2009, most of the housing projects were built in the city center. Besides Goesting, the neighboring district of Andritz, which is in the north too, also forms a prosperous housing development area. The major industrial area in the south only had a few projects.

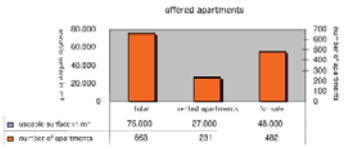


Fig. 134: Offered apartments

A survey by the *Austrian Association of Real Estate Trustees* in 2009 illustrates the number of offered apartments. The chart shows, that there was a higher demand for apartments for sale rather than rentable apartments.

the building. Either constructed as reinforced concrete walls or steel pillars, the exterior walls carry, along with the two static cores, the entire loads of the high-rise, therefore enabling the creation of the huge storage rooms, and the implementation of lightweight non-bearing partition walls. Frankly spoken, the exterior walls constitute a load bearing shell of the building that results in a structurally empty interior that can be filled with any functions. Moreover, the simple outer geometric form of the edifice allows it to be structurally extended. An annex to both the north and to the backside in the west is possible, and in this case, since both parcels offer plenty of space, desirable.

Located directly adjacent to the four-story building to the south, which is totally used as a residential apartment building, the high-rise could perpetuate this residential function especially in the office complex, which provides already a great basis for housing due to its spatial arrangement. Actually, accommodations are very sought-after at the moment in Graz. The local newspaper *Kleine Zeitung*, for example, reports[1] that approximately over 7000 new homes were built in 2010. The trend for this year (2011) is even increasing, but in spite of the many current major housing projects, the city still lacks in housing offerings. The database

1: http://www.kleinezeitung.at/allgemein/bauenwohnen/2817821/wohnbau-offensive-graz.story, 08/28/2011, 05:23am

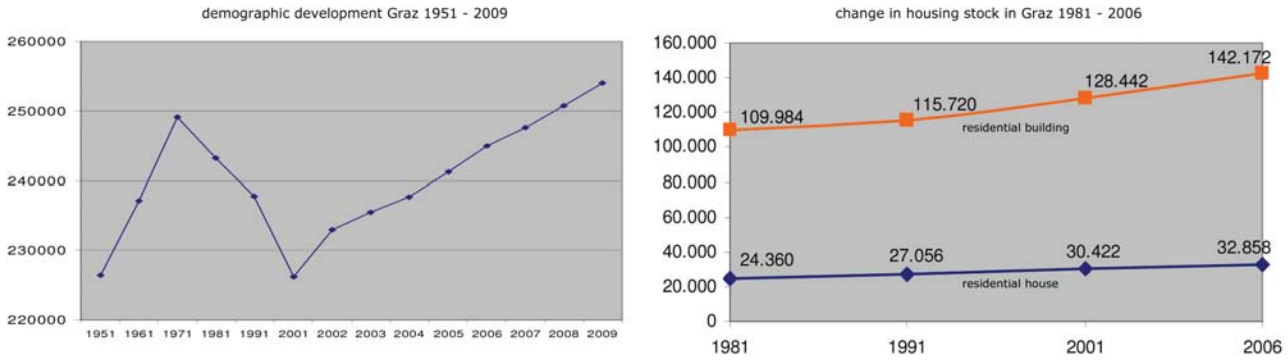


Fig. 135: Connection between the demographic development and the change in housing stock

of „*BauData-DOKUmedia*" documented a total of 56 housing projects, whereupon 38 of them were built in Graz alone. According to the ‚*Austrian Association of Real Estate Trustees*' and ‚*Statistics Austria*', a total of 4500 residential houses were permitted annually in the last five years. The number of apartments in multi-residential buildings (block of flats) built annually is estimately about 2000. A total of between 220.000 and 260.000m² of gross floor area was thus permitted every year. In 2006, Graz had a housing stock of 142.172 apartments. Compared with the results of the last housing census in 2001, the housing stock increased by 10% in these five years. Most currently, in January 2011, the city had a housing stock of 146.376 apartments. This development is associated with the fact that the population in Graz recorded a steady upwards trend since the turn of the millennium. In 2009, the city counted approximately 254.000 inhabitants and in September 2011, the city counted a total of 263.671 inhabitants in Graz. Here, the increase in population is only slightly caused by the birth rate. It is a result of the positive migration, especially the high international immigration. Altogether, these figures show the high demand for living spaces in the city. Another news service, the yellow pages for real estate services[2], reported that the request for new homes rises steadily, but the number of attractive properties is declining in the city. Another article from the *Kleine Zeitung* wrote[3], that due to the booming demand in the recent years even difficult unattractive apartments were taken and that there is more demand than supply. Summed up, the implementation of living spaces into the high-rise would be hence a prosperous and sustainable transformation.

As shown in the analysis of the surroundings, the high-rise is partially situated within a residential area that offers all the requirements of such a zone, like the many parks or the close proximity to daily-use services. Therefore the planning site would be indeed a fantastic location for the realization of residential apartments. As the plan of infrastructure illustrates, the high-rise is surrounded by many different and useful functions that improve the location in regard to living spaces. Within a walking distance of only five minutes from the site, you can find five doctors, whereupon three of them work as physicians of general medicine, and a pharmacy. For covering the daily demand of groceries, there are at least three major stores also just around the corner. If one wishes to eat out, he just has to cross the street and finds three restaurants and a bar. The prospective apartments would also enjoy a high security due to the police station, which is also directly across the street. Besides a soccer club with a huge sports park, and a fitness studio a little further away, one

2: http://www.immolinks.info/2011/10/17/wohnungsnot-am-grazer-immobilienmarkt/, 10/17/2011, 09:22am
3: http://www.kleinezeitung.at/allgemein/bauenwohnen/2855990/nachfrageboom-fischt-grazer-wohnungsmarkt-leer.story, 10/17/2011, 11:48am

Fig. 136: Major grocery store

Three major grocery stores are within walking distance. This aerial view shows the *Merkur Markt* to the west, which is perhaps the closest store, and which is located on the top of the slight slope. Many large trees block the view to the parking lot.

Fig. 137: Recreational park

One of the biggest recreational parks in the area is the private sports club to the east directly opposite of the electric supply company.

State	international guests		
	in 1.000	change	
		in %	in 1.000
Germany	42.718,2	*-1,4*	-606,5
Netherlands	8.117,3	*0,6*	48,4
Switzerland	3.877,8	*12,0*	415,5
United Kingdom	2.749,0	*-5,3*	-153,9
Italy	2.575,5	*-1,0*	-26,0
Belgium	2.363,0	*3,6*	82,1
Czech Rebublic	1.816,1	*5,4*	93,0
France	1.677,7	*2,0*	32,9
Hungary	1.406,4	*6,5*	85,8
Denmark	1.391,7	*-3,0*	-43,0
Poland	1.335,2	*9,1*	111,4
Russia	1.298,3	*26,5*	272,0
USA	1.056,1	*-4,9*	-54,4
Rumania	714,9	*6,2*	41,7
Sweden	692,1	*-1,1*	-7,7

Fig. 138: International visitors

This chart by ‚*Statistics Austria*' portrays the amount of arriving international guests in all of Austria. The numbers represent the results of the overnight stays between January and October of 2011. They are compared to the results of the previous year to illustrate the in- or decrease of the international guests. For example, there were 606.500 less visitors from Germany, which equals a decrease of 1,4%. On the other hand, 415.500 more people from Switzerland arrived, which equals an increase of 12%.

can also find a dancing studio and a judo center for the satisfaction of the sportive or recreational demand. If pets should be allowed in the apartments, then the prospective inhabitants furthermore would have the ability to equip their flat with pet components at the nearby pet store. The very good connection to the city center and to the main train station is a further advantage of the site. The list goes on and on and, as seen in the analysis of the surroundings, offers many other services too.

As this research implies, one goal for the new design of the site will be the implementation of residential apartments. Likewise to the old former factory building of the company *Stiefelkönig*, which was divided into two different functions, which were architecturally separated, the new design is also intending to realize a construction that is not used for one purpose only, but as a building with multiple mixed uses. Commercial spaces would be unlikely to succeed, because of the already abundant commercial supply in this area. There is a large shopping mall in the north, which is quickly reachable either by car or by bus, and which basically provides the entire district with many diverse shopping possibilities. It is also inadvisable to combine residential apartments with industrial functions since the noise development could be harmful for the

State	international guests			national guests			total		
	in 1.000	change		in 1.000	change		in 1.000	change	
		in %	in 1.000		in %	in 1.000		in %	in 1.000
Burgenland	629,4	*3,6*	21,9	2.008,1	*-0,6*	-12,1	2.637,5	*0,4*	9,7
Carinthia	7.303,3	*0,4*	29,1	4.461,0	*2,8*	121,5	11.764,3	*1,3*	150,6
Lower Austria	1.845,3	*5,8*	101,2	4.025,1	*2,4*	94,3	5.870,4	*3,4*	195,5
Upper Austria	2.558,7	*6,3*	151,6	3.611,6	*1,1*	39,3	6.170,3	*3,2*	190,9
Salzburg	16.264,9	*0,6*	97,0	5.200,3	*0,9*	46,4	21.465,2	*0,7*	143,4
Styria	3.633,7	*3,7*	129,6	6.130,4	*0,6*	36,6	9.764,1	*1,7*	166,2
Tyrol	34.875,8	*0,1*	34,8	3.349,4	*0,1*	3,3	38.225,2	*0,1*	38,2
Vorarlberg	6.426,3	*-1,9*	-124,5	788,6	*-2,0*	-16,1	7.214,9	*-1,9*	-140,6
Vienna	7.833,6	*7,8*	566,8	1.696,2	*-8,2*	-151,5	9.529,8	*4,6*	415,3
Austria	**81.371,0**	***1,3***	**1.044,2**	**31.270,7**	***0,5***	**155,6**	**112.641,7**	***1,1***	**1.199,8**

Fig. 139: International guests in each state of Austria (numbers represent the overnight stays between January and October 2011

inhabitants. Consequently, there are only two other uses that I would like to consider. One of them is the already mentioned extended stay hotel. Generally, Styria was visited either for leisure, recreational or business purposes by 965.100 international and 1.933.200 national guests between January and October of 2011 alone. A total of 9.764.100 accommodations or overnight-stays by the visitors were counted. Most of the arriving international guests came from Germany, Switzerland, Italy, and the United States of America. 6.800 establishments provided approximately 109.800 beds between November 2009 and October 2010. Last year in 2010, the number of arriving guests achieved a significant increase of 3,3% in all of Austria. In this connection, the number of international guests increased by 3,0%, and the number of national visitors increased by 3.9%. These figures show that, likewise to the residential apartments, the hotel industry also faces a high demand. Graz is a very famous tourist spot not only since the award of the title *European Capital of Culture* in 2003. To this day, the district of the planning site - Goesting - does only offer one commercial hotel, which is northeast of the plot. Due to the same reasons, why apartments would fit very successfully in this area, hotel rooms would also be a very prosperous function for the project. Besides the fantastic connection to the city center and to the train station, which is very beneficial for hotel guests, visitors arriving

State	November 2009 to October 2010			Winter 2009/10			Summer 2010		
	establishm.	beds		establishm.	beds		establishm.	beds	
	in 1.000		+/- in %	in 1.000		+/- in %	in 1.000		+/- in %
al accommodation facilities									
Burgenland	1,3	24,4	*2,1*	1,1	22,4	*2,4*	1,3	24,1	*1,4*
Carinthia	9,4	133,0	*-1,7*	5,7	87,4	*-2,7*	9,3	130,4	*-2,2*
Lower Austria	3,2	67,3	*-0,1*	2,9	63,6	*-0,5*	3,2	66,4	*-0,6*
Upper Austria	3,8	71,7	*-0,2*	3,1	62,8	*0,7*	3,7	70,7	*-0,8*
Salzburg	11,7	206,8	*0,7*	11,2	199,7	*0,2*	11,2	191,8	*0,4*
Styria	6,8	109,8	*1,5*	6,3	104,5	*2,1*	6,6	107,4	*0,7*
Tyrol	23,8	350,0	*0,0*	23,3	340,8	*-0,1*	23,0	334,5	*-1,2*
Vorarlberg	5,7	73,1	*1,8*	5,5	70,3	*1,5*	5,6	68,0	*2,3*
Vienna	0,4	54,1	*1,1*	0,4	52,0	*1,9*	0,4	53,2	*-0,4*
Austria	**66,2**	**1.090,2**	***0,3***	**59,5**	**1.003,6**	***0,3***	**64,4**	**1.046,5**	***-0,5***

Fig. 140: Number of hotel establishments and beds for each state of Austria - change of the amount of beds compared to 2008/2009

Fig. 141: Neighboring house

The high-rise is directly adjacent to a pure residential house. The spatial arrangement of the office complex perfectly enables the implementation of residential apartments or guest rooms.

Fig. 142: Backyard - parking lot

The former paved parking lot in the backyard allows an expansion of the construction to the west.

Fig. 143: Extended apartment

This picture shows one offering by the long-term hotel chain *Extended Stay America*. The 3d visualization to the right clarifies the spatial distribution of the suite.

Fig. 144: Extended apartment

Extended stay apartments offer features, which are unusual for standard hotels, like an office den or kitchen as shown in the picture above. These rooms are especially of interest for business travelers on extended assignments.

Fig. 145: 3d visualization of the King Suite of the American hotel chain Extended Stay America

by car can easily reach the site from the north without any advanced knowledge of the city plan. Recently a new type of hotel became popular in Austria especially for business visitors, who intend to stay for a longer period of time than the usual length of a vacational visit. Extended stay hotels, which are already very successful in the United States, begin to become of interest for the local market. This kind of apartment hotel includes features, which are unavailable at standard hotels. Altogether, these features intend to offer a more home-like environment for the guests. Among them is, for example, a self-serve laundry room, or the integration of kitchens in the individual guest-rooms. Generally, this type of hotel combines the flexibility of domestic living with the addition of services of a hotel. They are specifically attractive to business travelers

on extended visits and to anyone else in need of temporary housing. The United States already have over 27 chains of this hotel type. The concept came to Europe a while ago and is spreading throughout the continent because of the increasing number of travelers and especially business guest each year. In combination with the residential apartments, these long-term hotel rooms with the many features could form a successful symbiosis, where both functions could benefit from each other. For example, a concierge who is responsible for the control and observation of the entrance to the building, and who is in charge for the well-being of the guests, could also be of advantage to the permanent residents. For instance, he could accept parcels for the inhabitants or he could come in handy when the residents are on vacation and need someone to monitor their apartment. He could furthermore somehow embody the function of a janitor, who is responsible for the repair or for the calling of services that then repair broken building equipments and the like. This basic idea of supported living does already exist for example in Hong Kong, where security at the main entrance of the upper residential floors of a mixed-used high-rise building control the access to this zone and prevent anyone without permission to reach those floors. Summed up, this concept of the extended stay hotel constitutes a prosperous and sustainable alternative use for the project and fits very appropriately on the planning site along with the permanent residential apartments.

The second other use that I would like to consider is the offering of spaces for small businesses and enterprises. With regard to the former use of the high-rise as a branch office building with a high amount of office and conference rooms, the new design could also provide the area with accommodations for office space. Likewise to the high demand for residential apartments, spaces for small offices are similarly sought-after. According to ‚*Statistics Austria*', 28.015 new enterprises with 67.055 employees were founded in the year of 2009. In comparison to the year before, the rate of start-up companies increased thus by 6,9%. By 2009, there were already 55.524 active companies in Styria alone. The rate of new foundations rose by 7,5%, therefore making Styria the state with the highest number of new enterprises. The demand for office space is satisfied by the creation of approximately 32.000m² of office accommodations every year. Here, especially smaller offices are very in demand. However, there are currently 105.000m² of abandoned and empty former offices, which matches a vacancy rate of 5,8% of the total amount of office spaces in Graz, which is around 1,8M m². The majority of these vacancies can be found in older historic buildings nearby the city center and are situated primarily in the first floors, which is presently not attractive for small enter-

Fig. 146: Sun exposion-afternoon

The orientation of the current structure is already advantageous for the sufficient exposure of natural sunlight. Among other things, this makes the implementation of residential functions and hotel rooms possible.

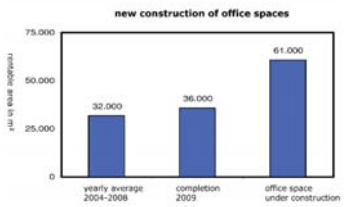


Fig. 147: New office spaces

This chart by the *Austrian Association of Real Estate Trustees* shows the new construction of office spaces in Graz. 2009 already had an above-average realization of office accommodations. The tendency is increasing.

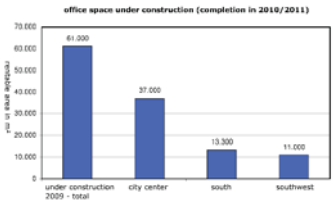


Fig. 148: Offices under constr.

2009 had a remarkable high number of office spaces under construction. 61.000m² of rentable space were planned, whereupon 37.000m² were built in the city center alone. As the image to the right shows, the northern area has just a few office projects.

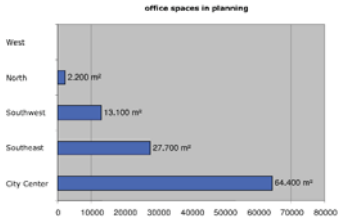
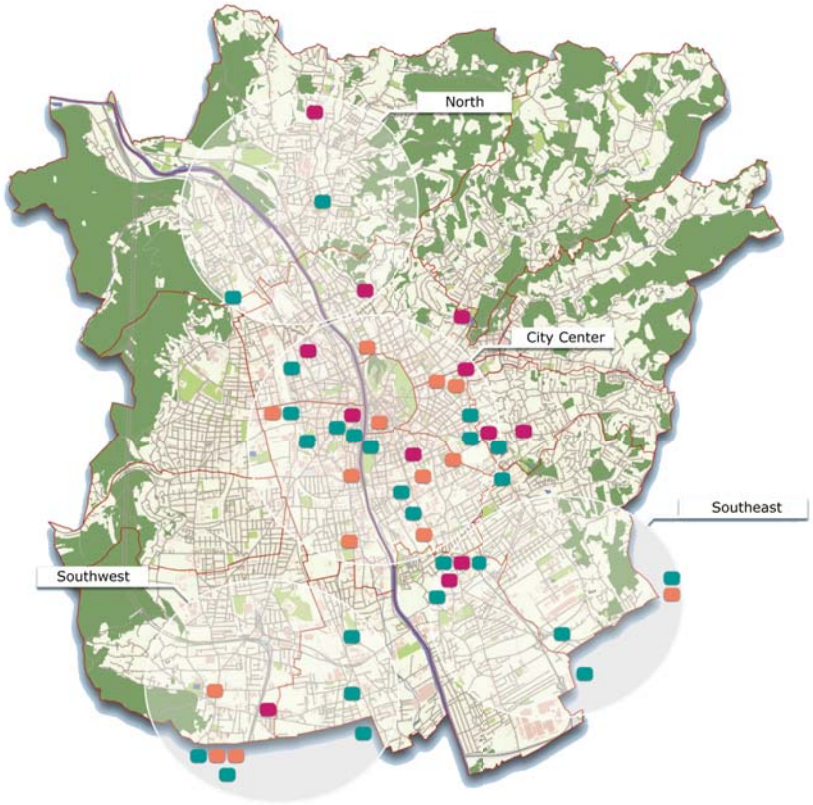


Fig. 149: In planning by area

Most of the office accommodations in planning are located in the city center. The industrial area in the south and southeast has a high number of offices too. The north of Graz only has 2.200m² of space in planning, and exhibits a prosperous development area.



office space in planning
office space under construction
finsished office spaces - 2009

offices in Graz:
population:
263.617 (Jan. 2011)

start-up companies:
28.015 (all of Austria 2009)

total office space in Graz
~1.800.000m²

office space created annually (average):
32.000m²

vacancy rate:
5,8% - 105.000m²

creation of office spaces in 2009:
36.000m²

utilization rate:
31.000m² - 86%

Fig. 150: Distribution of office projects in Graz

prises. Anyways, the vacancy rate in new office projects is very low, and the demand is mainly for very well-equipped office spaces. Enterprises in unattractive locations move to new and optimized accommodations. Thus a large part of the office leasing market is carried out mainly through property exchange. The reason for this change in location is almost never caused by the wish to expand the company, but it is a result of the intention of reducing costs through the efficient use of space. The fact that there are unoccupied office rooms does therefore not lead to the conclusion, that new office accommodations won't be taken. In 2009, 18 office projects with a total of 61.000m² of accommodation were erected in Graz. The utilized capacity was here almost over 90%. Here, more than half of the projects are located in the city center and in the

southwest. In comparison, the north of Graz offers currently only a few accommodations for offices. In 2009, approximately 4.000m² of office space was completed in this area of the city. In 2010, the realization of further 1.200m² was undertaken. Altogether, experts predict a prosperous development potential in the north, where the planning site can be found. In this connection, the fantastic infrastructure also benefits prospective office rooms. As described in the analysis of the surroundings, the high-rise is amidst two main functional zones - the residential and the commercial zone. Most of the neighboring companies are located east of the *Wiener Straße* in the first floors of the old buildings, which are built as massive constructions in the *Wilhelminian Style*. The implementation of office spaces in the project would be advisable, as shown in the previous figures, because new and modern office accommodations are in demand and would fulfill the requirements of current enterprises that consider relocation to a better-equipped office building. Furthermore the project would then also provide spaces for newly founded companies.

Summarized, three prospective functions are considered for the revitalization of the existing high-rise:
-residential apartments for permanent residents
-extended stay hotel apartments for all kind of visitors
-office rooms for small enterprises or companies

Design Goals

What am I going to offer?

- a transformation of the current building and its site into a representative and central point in the area
- a restoration of the current construction and an integration with the new design
- connection with the minor street on the backside of the building for a direct access from the west
- residential apartments/condominiums, long-term hotel apartments and office spaces
- barrier-free apartments or condominiums in different variations and styles
- connection of all three functions with an included parking area and recreational space
- inviting spacious entrance hall for both residential and office
- additional service for every inhabitant with the assignment of a personal concierge/security at the front desk
- shared services for inhabitants and temporary visitors
- lower level for business or commercial use

For whom do I want to design?

- apartments or condominiums for small families, young couples, single persons and the retired
- extended-stay hotel apartments for business travelers on extended assignments, university assistants with temporary contracts, diplomats, missionaries, correspondents, families in the midst of a relocation, tourists, and anyone else with the demand of temporary housing
- office rooms for small companies, organizations or clubs

What are my intentions?

- to upgrade a decaying building and to therefore enrich the cityscape
- to offer an increased living quality in a currently unfavorable living area
- affordable and high-quality housing for the satisfaction of the current high demand for living spaces

- distinguishable and representative residential and office high-rise, which will be seen from the distance
- integration of the design in the abundant natural elements adjacent to the site
- separation between office spaces and housing
- not a mere stacking of flats, but the possibility to develop identity for each apartment

What will be the expression of my building?

- distinguishable building in a constructional monotone area
- representative and inviting
- privacy for housing, public display for office

Room Allocation Plan

Residential Apartments

Entrance Hall
Anteroom
Bathroom
Toilet
Kitchen
Rooms
Working Room - Office
Living Room
Dining Room
Outdoor Space
Terrace
Access Balcony
Storeroom

Extended Stay Hotel

Entrance Hall
Dining Area
Kitchen
Sleeping Area
Working Space - Office
Living Room
Toilet
Bathroom

Shared Services - Management

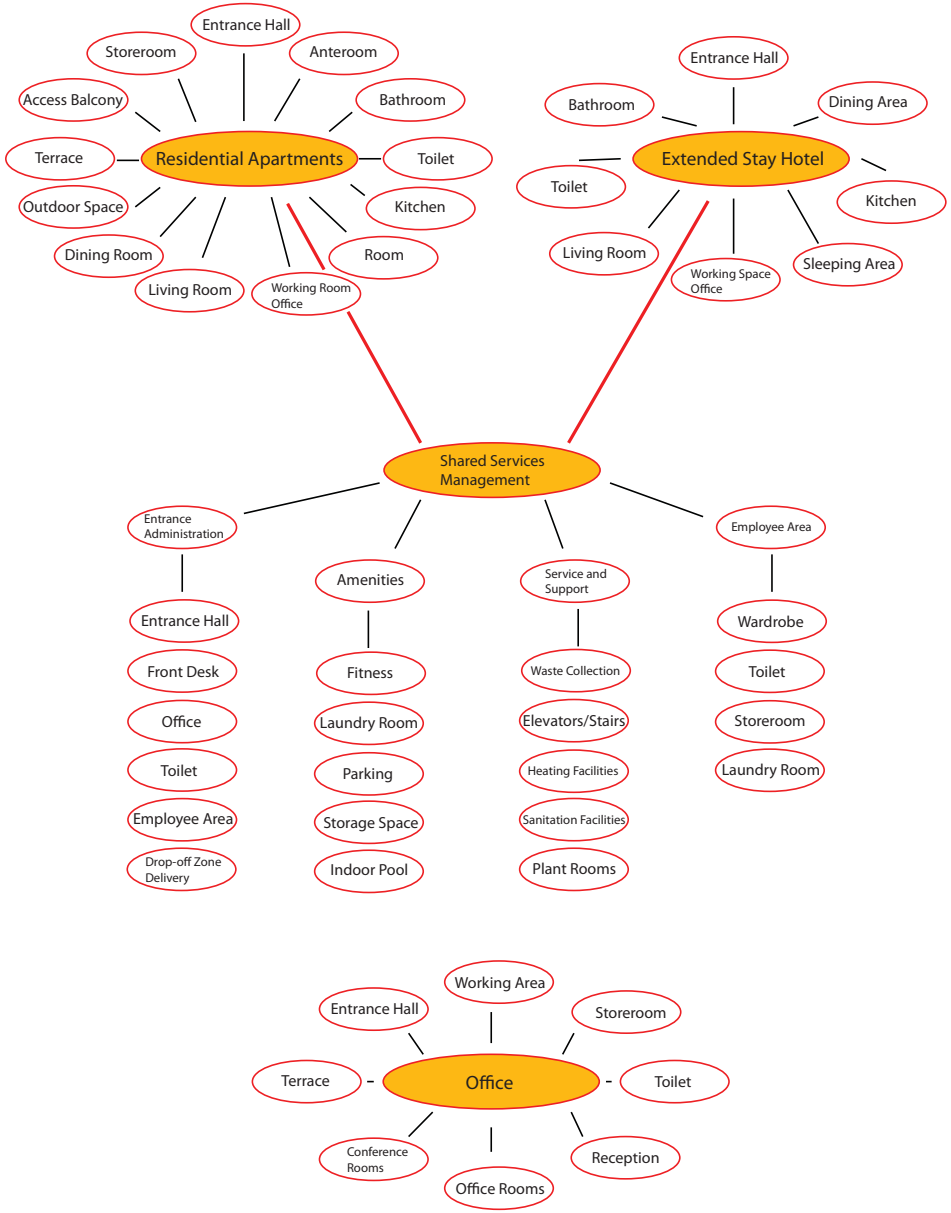
- Entrance Administration
  - Entrance Hall
  - Front Desk
  - Office
  - Toilet and Shower
  - Employee Area
  - Backyard
  - Drop-off Zone - Delivery
- Amenities
  - Fitness Room - Work Out
  - Dry Cleaning - Laundry Room
  - Playroom for Children
  - Indoor Swimming Pool
  - Parking Spaces - Garage
  - Storage Space
- Service and Support
  - Waste Collection
  - Elevators - Stairs
  - Heating Facilities
  - Sanitation Facilities
  - Plant Rooms
- Employee Area
  - Wardrobe
  - Toilet
  - Storeroom
  - Laundry Room

Office

- Working Area
- Storeroom
- Toilet
- Reception
- Office Rooms
- Conference Rooms
- Lobby
- Terrace

Brainstorming / Concept

Room Allocation Plan



Design Concept

The design is heavily influenced by the three main functions. They are not only incorporated into the existing structure, but also added as new constructions. Each of these functions has its own area within the building. They are connected by a central core, which also serves as the main access to each function. This central shared space contains the main entrance hall with the house management and the front desk, the two already existing huge freight elevators, and a staircase. In each floor of the building the individual functions can be reached by this shared core. Apart from the residential apartments, which are also accessible by a second developing core, with two smaller elevators as well as a staircase, every area in the building will be reached by this main shared central point.
This concept is then applied to the existing site, which leads to a basic distribution of the main functions as seen in *Figure 152*. The residential apartments are entirely located in the present structure of the high-rise. The two huge elevators can be found in the northern end of the existing structure. There the shared central core connects the residential apartments in the existing building with the office complex and extended stay

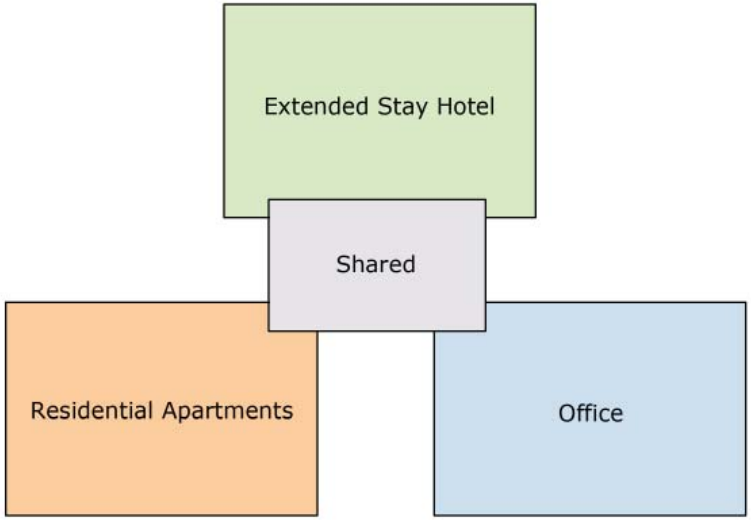


Fig. 151: Three main functions

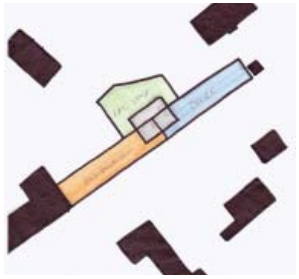


Fig. 152: Functional distribution
The three main functions are connected by the central core with the main entrance.

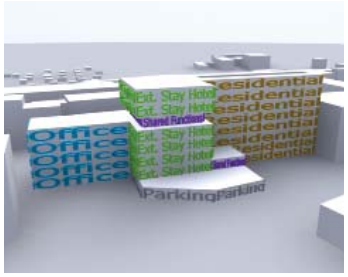


Fig. 153: Functional distribution

The existing structure is extended by two new annexes - the extended stay hotel apartments in the west, and the office complex in the north.

Fig. 154: Functional distribution

The office complex contains the open fore court in the ground floor, which emphasizes the main entrance and serves as a roofed space for waiting pedestrians at the bus stop.

hotel apartments, which both are added to the high-rise as new constructions. Hereby, the new annex with the office space will continue the building line of the high-rise to the north, and will thus be constructed on the northern triangular plot. For a direct access to the building from the *Josef-Pock-Straße* in the west, the second new annex with the extended stay hotel apartments will bridge the current gap between the street and the high-rise. This newly added structure will also contain parking spaces in addition to the underground garage, thus enabling an access to the site from the *Josef-Pock-Straße* by car as well. The underground garage on the other hand can only be reached by car from the *Wiener Straße* through the car access on the northern end of the triangular plot.

To provide a recreational area with common spaces in addition to the backyard for all users of the building, the roof of the office complex, which consists of four floors, will offer such a shared space with several amenities. It is also connected to the central core of the building and provides a magnificent view from the northeast to the southeast of the city. The exterior glazed wall of the central core is hereby closer to the elevator shafts than the exterior walls of the other floors. This jump in the facade results in an open terrace around the core, which enables the users of the building to especially enjoy the afternoon sun in the west and south. This partially open floor on the roof of the office complex can be used by the employees of the offices in the floors underneath for breaks, or by the inhabitants of the apartments for leisure activities.

Another area of the edifice, where shared spaces provide amenities for all users of the building, can be found in the first floor. Next to the main services of the house management, which is directly adjacent to the huge entrance hall, the first floor contains amenities such as a laundry room, a playroom for children, an indoor swimming pool with a locker room and showers, and a fitness room. These common spaces for all users of the building also serve as a separation or buffer zone between the public street and the private residential apartments. Similarly, the first floor serves again as a separation zone in the newly added construction in the north. Here, the office rooms are also separated from the public *Wiener Straße*. This buffer zone contains, besides the accommodations of the house management, a small bakery with an included coffee shop and a small store. Moreover, the first floor has here only half the width of the office floors above, thus resulting in a roofed open space. This space, which is directly adjacent to the *Wiener Straße,* contains the already existing bus stop. Therefore, the bakery and the small store do not only profit from the users of the building, but also from the pedestrians who are waiting at the bus stop. This roofed fore court also results in another quality. The main entrance of the building to the central shared core is clearly emphasized.

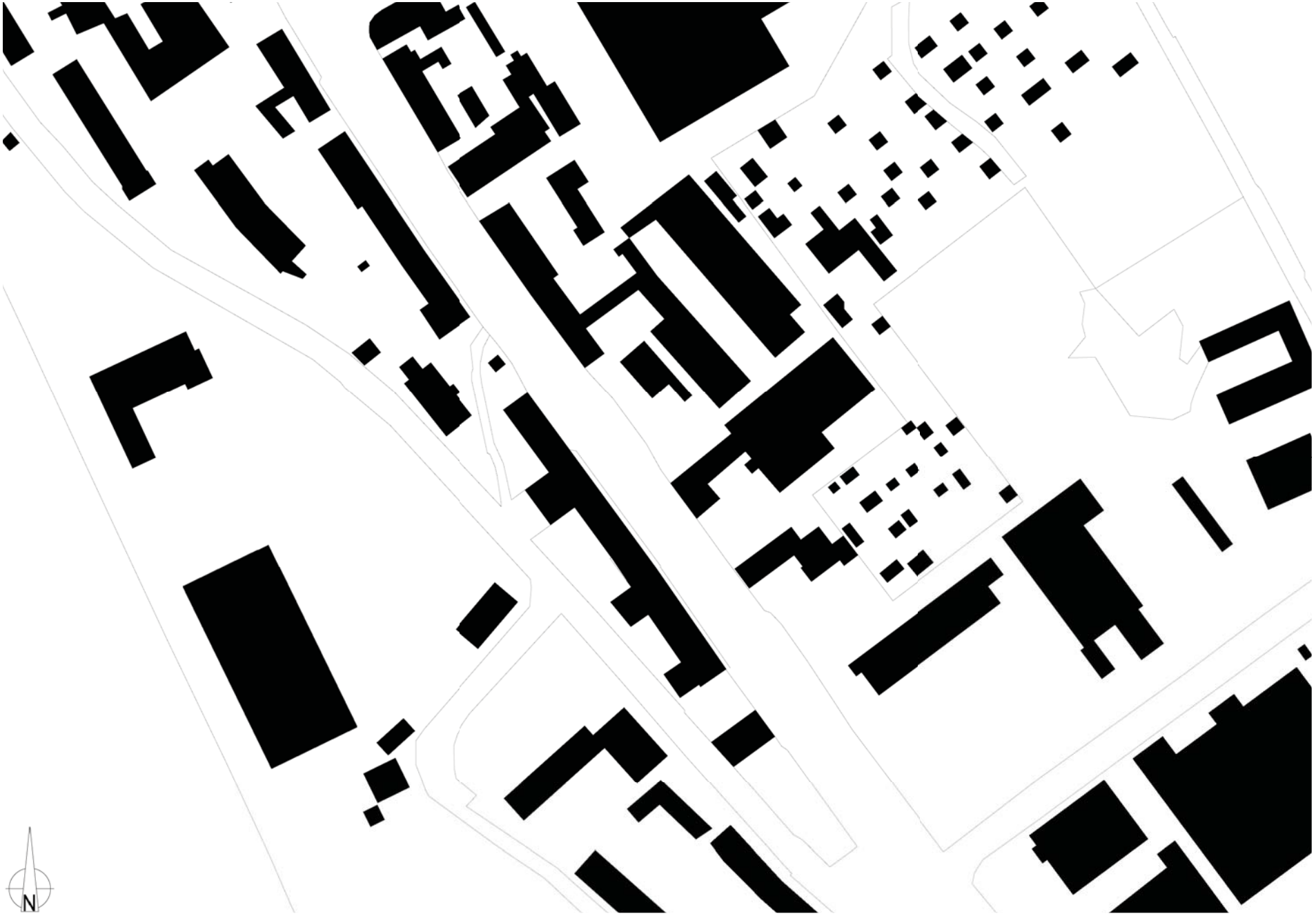


Fig. 155: The new design incorporated in the exisiting city structure.

Floor Plan First Floor

The floor plan of the first floor forms the base level for the three main functions above. All rooms in this floor can be used by all users of the entire building. The main entrance with the huge entrance hall is located on the northern triangular plot next to the *Wiener Straße*. This main entrance is accentuated by the roofed fore court with the bus stop. This fore court will be frequented by both the users of the building as well as pedestrians waiting for the bus to arrive. To benefit from the waiting crowd and to provide snacks and coffee for the users of the building, one can find a small store as well as a bakery and coffee shop next to the bus stop. Also located next to the bus stop and directly adjacent to the main entrance, there is a drop-off parking space for all kinds of delivery. For example, the mailman can park his van at the drop-off and deliver the mail to the house management, which is right next to the entrance hall. There, the employee at the front desk receives the mail and can then either store it in the storage room, or notify the respective recipient of the mail. The house management is not only intended to receive deliveries, but is in charge for basically everything concerning the well-being of the inhabitants, the long-term hotel guests and for the maintenance of the entire building. The accommodations of the house management at the entrance hall are therefore the center of administration. Behind the front desk and next to the storage room, the employees have a small break room with an included bathroom and shower. There is also the possibility to exit the building and relax in a small green backyard.

From the entrance hall one can also reach the first level of the parking space as well as the huge and green backyard, which offers two different kinds of gardens with their own quality, and a playground. The open gangway next to the backyard connects the entrance hall with the second developing core, which provides two smaller elevators and a staircase. Due to the elevated first floor of the existing structure, the rooms between the entrance hall and the second core are about a meter above the level of the rest of the first floor. Thus a small staircase and a ramp, which are both located at the open gangway next to the backyard, lead to those rooms. There, one can find amenities such as a laundry room with an adjacent playroom for children, and an indoor swimming pool, which can either be reached through a locker room with included showers and toilet, or from the second developing core. Also next to the second core, there is a spacious fitness room.

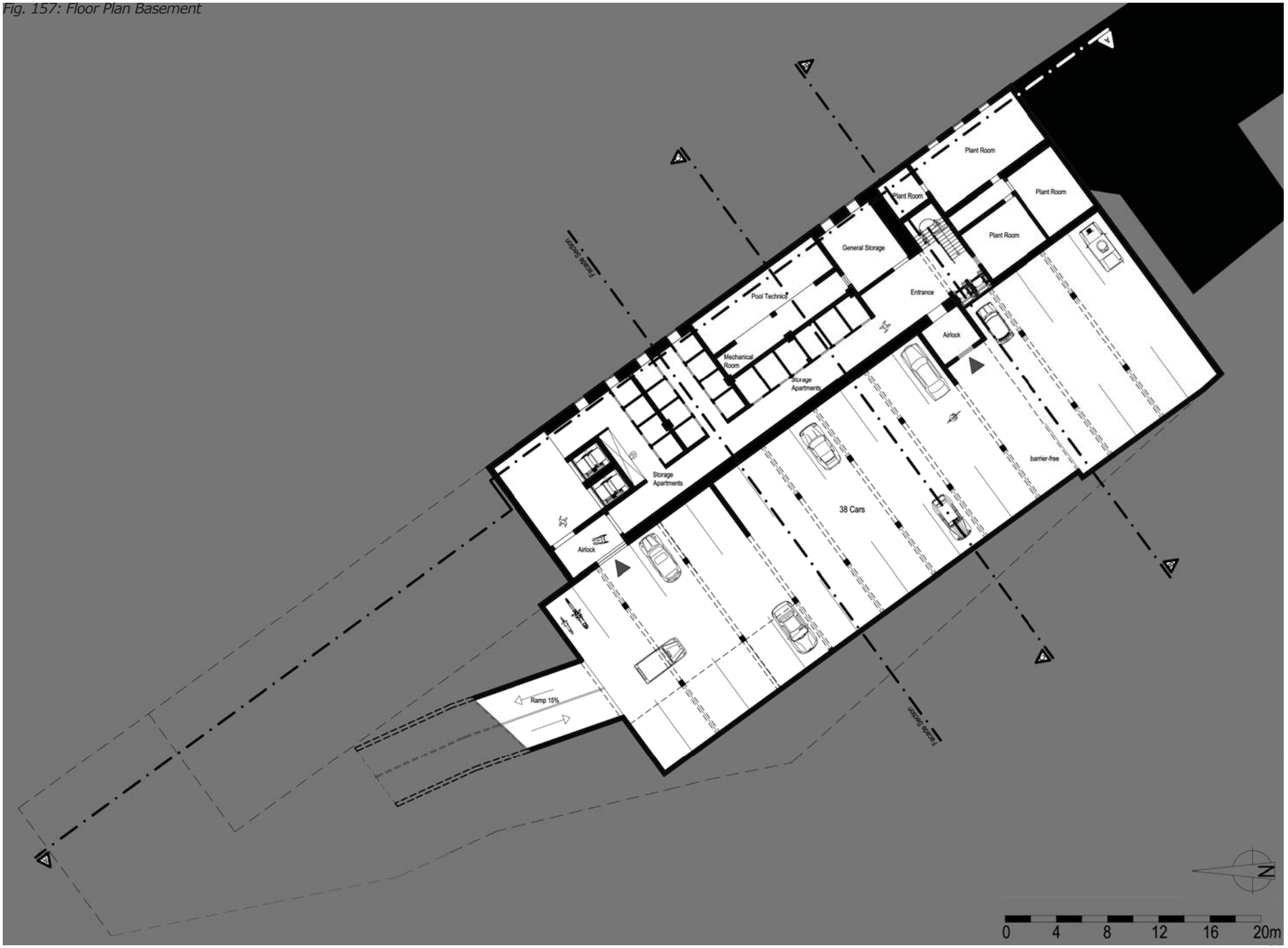
Fig. 156: Floor Plan First Floor

Floor Plan Basement

The basement of the building is either accessible by the two huge elevators at the central shared core, or by the two smaller elevators or staircase at the second developing core in the south. All rooms in this floor are not intended to be habitable rooms. The structure of the basement is barely altered from its current condition. Natural light reaches the basement through the already existing light wells at the eastern side of the building.

A huge underground garage for 38 vehicles and motorcycles is connected to the existing structure. This garage is accessible from the car access at the most northern part of the plot. One can enter the building from the garage through an airlock at the central or second developing core. A total of 18 storage rooms is located between the two cores and is intended to be used for the inhabitants of the residential apartments. A general storeroom can be found close to the entrance of the second core. This room offers storage space for the house management, the offices and the extended stay apartments. All the other rooms in the basement primarily serve as plant rooms for the entire building.

Fig. 157: Floor Plan Basement



Floor Plan Second Floor

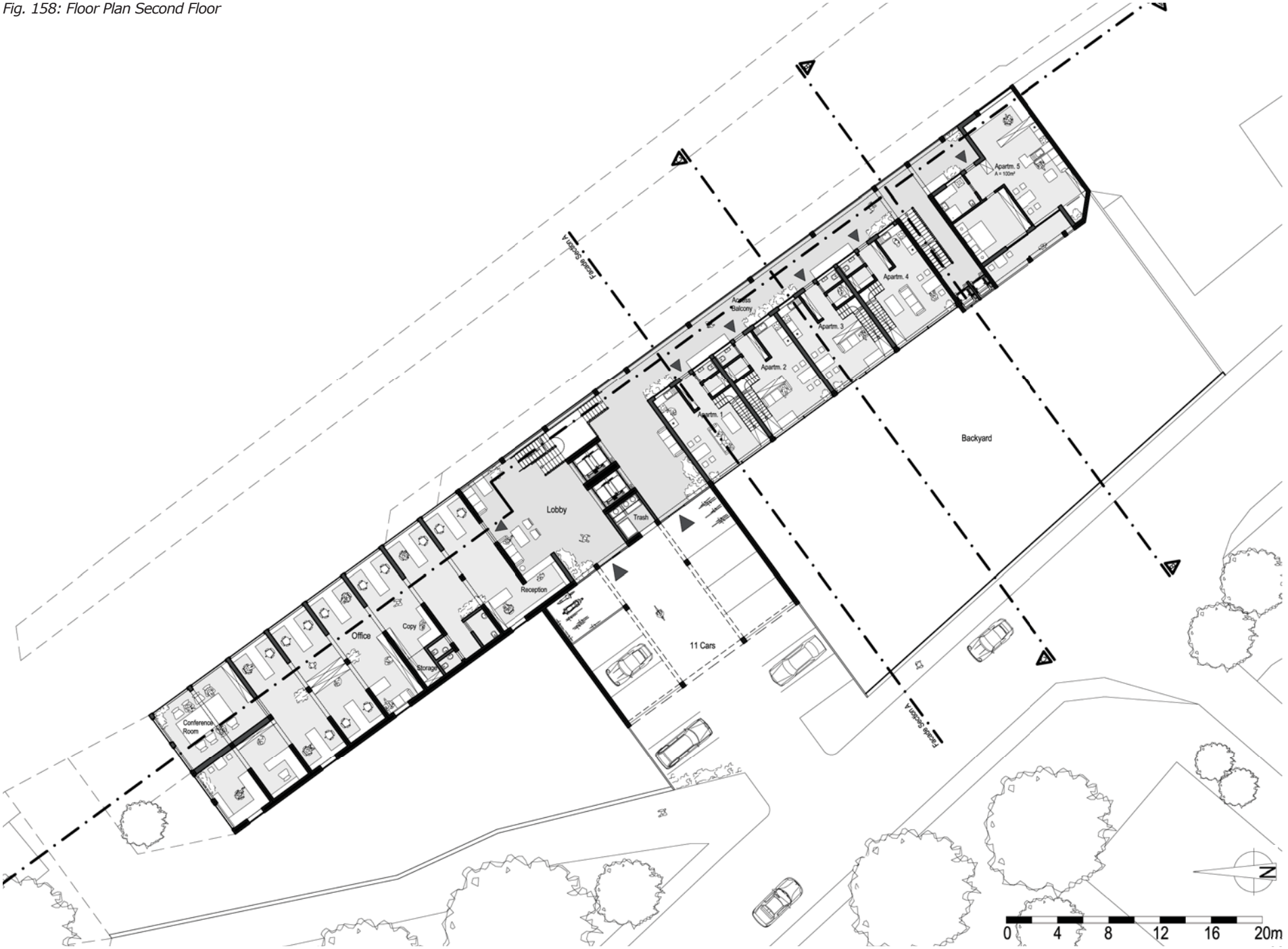
The second floor of the building is above the street level of the *Wiener Straße*, but on the same level of the *Josef-Pock-Straße* in the west. Here, the second floor of the parking space, with parking lots for eleven vehicles and cycles, connects the building with this street, therefore enabling a direct access from this side to the building as well. Thus, this floor can either be reached by this mentioned access through the parking space, or by either of the two developing cores.

The central shared core separates the two main functions - the office space in the north, and the residential apartments in the south. Both functions can be individually entered through the parking space. Next to the parking space and close to the entrance of both functions, one can find a dedicated room for the trash collection. All floors above are equipped with trash ducts, which are located next to the elevator shaft. Trash can be discharged on all floors through these ducts and is then collected in the trash room on the second floor. The garbage collection can then access the site through the parking space and collect the trash from this room.

The entrance to the office complex leads to a huge lobby, which is part of the central shared core. This lobby is also reachable by the elevators or by the staircase from the entrance hall in the first floor. Each office space in the floors above has the same spatial organization. A reception is connected to the lobby and welcomes arriving guests or employees. A waiting area is included in the lobby next to the reception for guests who are, for example, waiting for an appointment. The main office space can then be entered through an entrance at the waiting area. The entire office space contains nine working booths for approximately eighteen employees. Every office space also provides bathrooms, a storage room and a copy room. At the northern end of the building, one can also find a spacious conference room, which enables a fantastic view on the *Wiener Straße* as well as on the eastern part of the city, due to its location within the building. There are also two more private office rooms for the administration of the individual companies adjacent to the conference room.

The entrance to the residential apartments, on the other hand, also leads to a minor entrance hall, which is connected to the access balcony on the east side of the building. The apartments between the two developing cores are each duplex apartments. Hereby, the first story of the apartment is reachable through the access balcony. The second story of the apartment has the same width as the whole building, therefore overtopping each access balcony underneath. Adjacent to the second developing core in the south, there

Fig. 158: Floor Plan Second Floor



is also a single-story apartment incorporated into the existing structure. Altogether, there are four different apartment floor plans, which are going to be described on page 96.

Floor Plan Third Floor

The third floor contains all three main functions for the first time. Their spatial distribution reminds of the basic concept of the design. The central shared core connects all three functions. The office complex in the north is hereby identical to the office space in the floor underneath. A spacious lobby next to the elevator and staircase welcomes arriving guests. The main entrance to the office complex is located next to the reception and waiting area.

Also part of this lobby is the entrance area for the extended stay hotel apartments. Each floor that is equipped with these hotel apartments, offers a total of three hotel rooms. Although they look fairly similar, they differ in floor area and slightly in the spatial organization. The floor plans for these rooms are going to be described on page 104.

The hall on the southern side of the elevators is also connected to the entrance area and to the lobby. In this floor, however, there is no access balcony, because the second stories of the duplex apartments use the whole width of the entire building.

Fig. 159: Floor Plan Third Floor

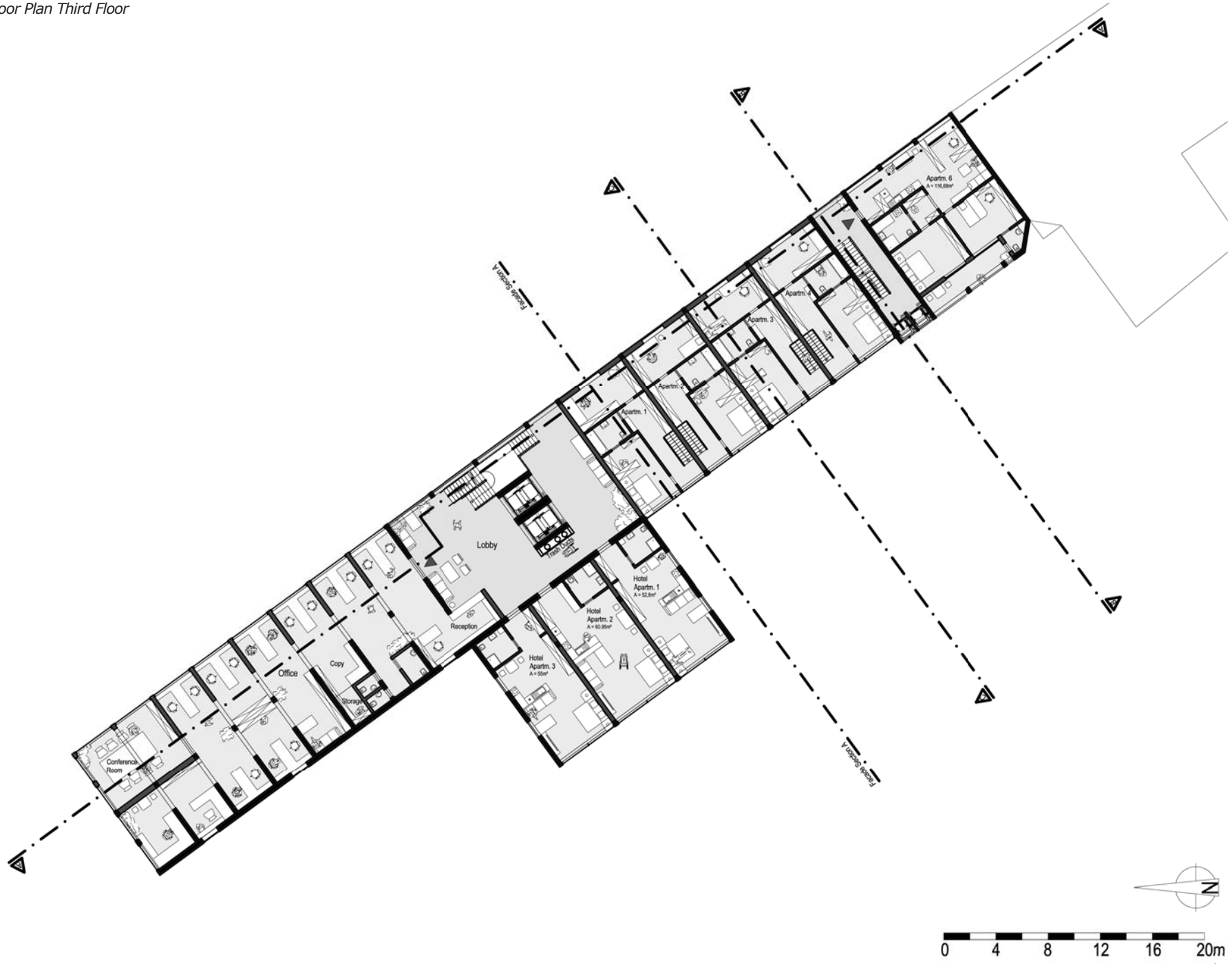


Fig. 160: Bordering building

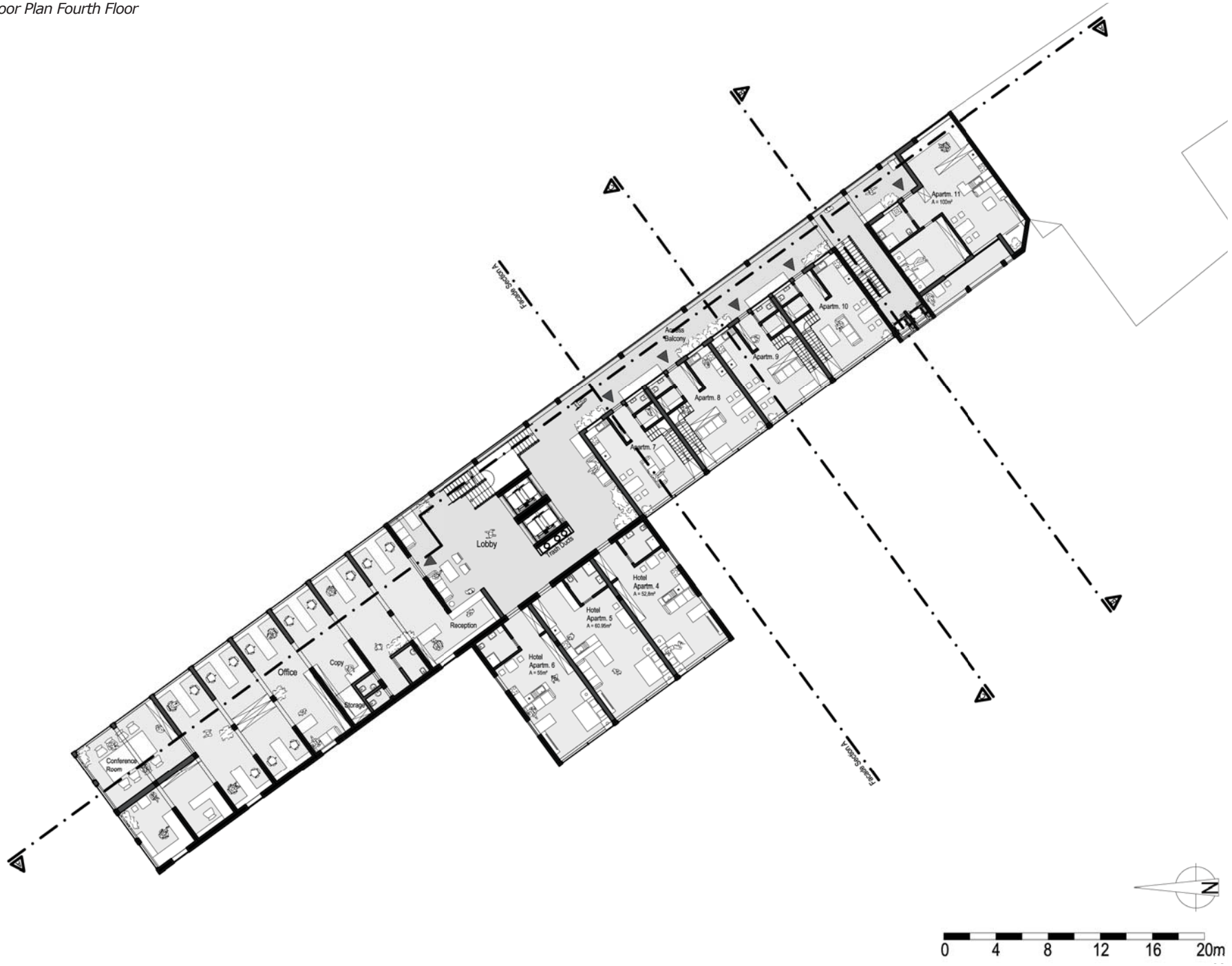
The neighboring residential building is connected with the high-rise in the south.

Floor Plan Fourth Floor

The fourth floor also contains all three functions. It is very similar to the floor underneath. Here, however, the residential complex again has an access balcony because of a new set of duplex apartments, which have their first story and their entrance in this floor.

This floor also marks the last time to share a bordering wall with the adjacent building. The existing structure is connected with this neighboring building in the south. At the southwestern point of the high-rise, a triangular shape is cut out of the building to enable the installment of balconies on the adjacent residential building. This structural arrangement is left in its original current form.

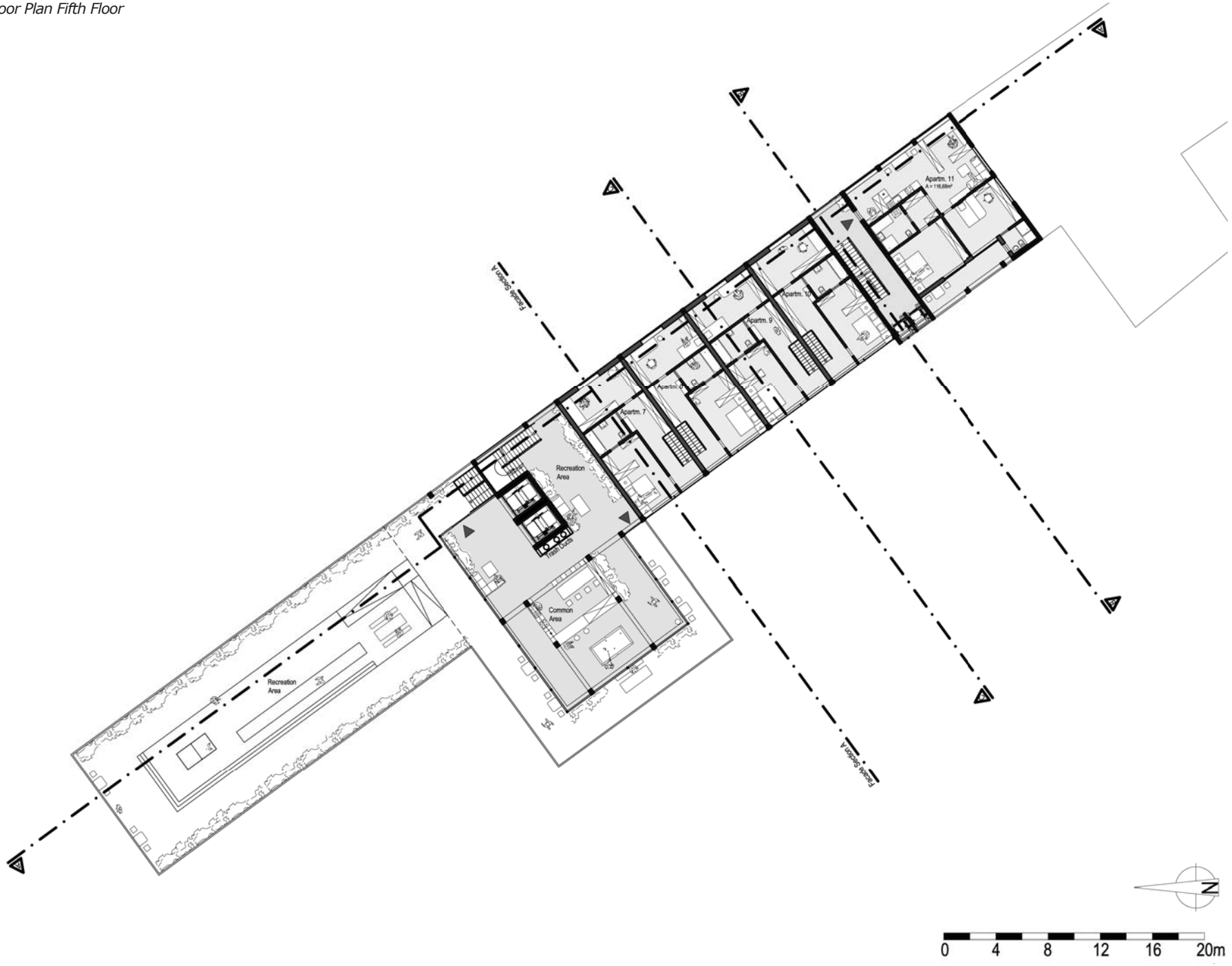
Fig. 161: Floor Plan Fourth Floor



Floor Plan Fifth Floor

The fifth floor of the building has a fairly different organization. Of all three main functions, only the residential apartment complex can be found in this floor. Hereby, the second stories of the duplex apartments again use all the width of the existing structure. Therefore this floor does not contain an access balcony.
The other two functions - the office complex and the hotel apartments - are also not part of this floor. Instead the space is used for the partially open recreational space and common areas. Due to the fact that the office complex ended in the floor underneath, the roof of this complex functions as a giant open roof terrace. This terrace is reachable by the staircase or by the two huge elevators in the glazed central shared core. This open space is intended to be for all users of the entire building. Employees of the offices in the floors underneath can use it for breaks or even for meetings. Inhabitants of the residential apartments or long-term hotel guests can use it for several leisure activities. The center of the terrace is 54cm lower than the rest of this floor, which forms a separated level on the terrace that results in seating opportunities along the edge of the lowered level. This distinguished space also contains other seating possibilities with tables. For example, employees have the possibility to spend their lunch break on this terrace and enjoy the view over the city. There is also the idea to install a relaxing massage path on this lowered level, where not only employees, but all users of the building could relieve their stress by walking barefoot on this specifically designed surface. Due to the displacement of the exterior walls of the shared core in this floor, the open terrace runs around the glazed core and thus enables users of the building to enjoy the view to the west as well as the sunshine in the afternoon.
The glazed shared core itself contains recreational areas as well. In the middle of this room, next to the elevator shafts, there is a seating area which includes a small kitchen. This can be used for celebrations or other festivities. For example, parties can be held in this area, which provides a spectacular panorama view over the city. This floor also offers a ping-pong table and a pool billiard table. Due to the end of the office complex, all floors above have a developing entrance area for the residential complex and the hotel rooms only on the southern side of the elevators.

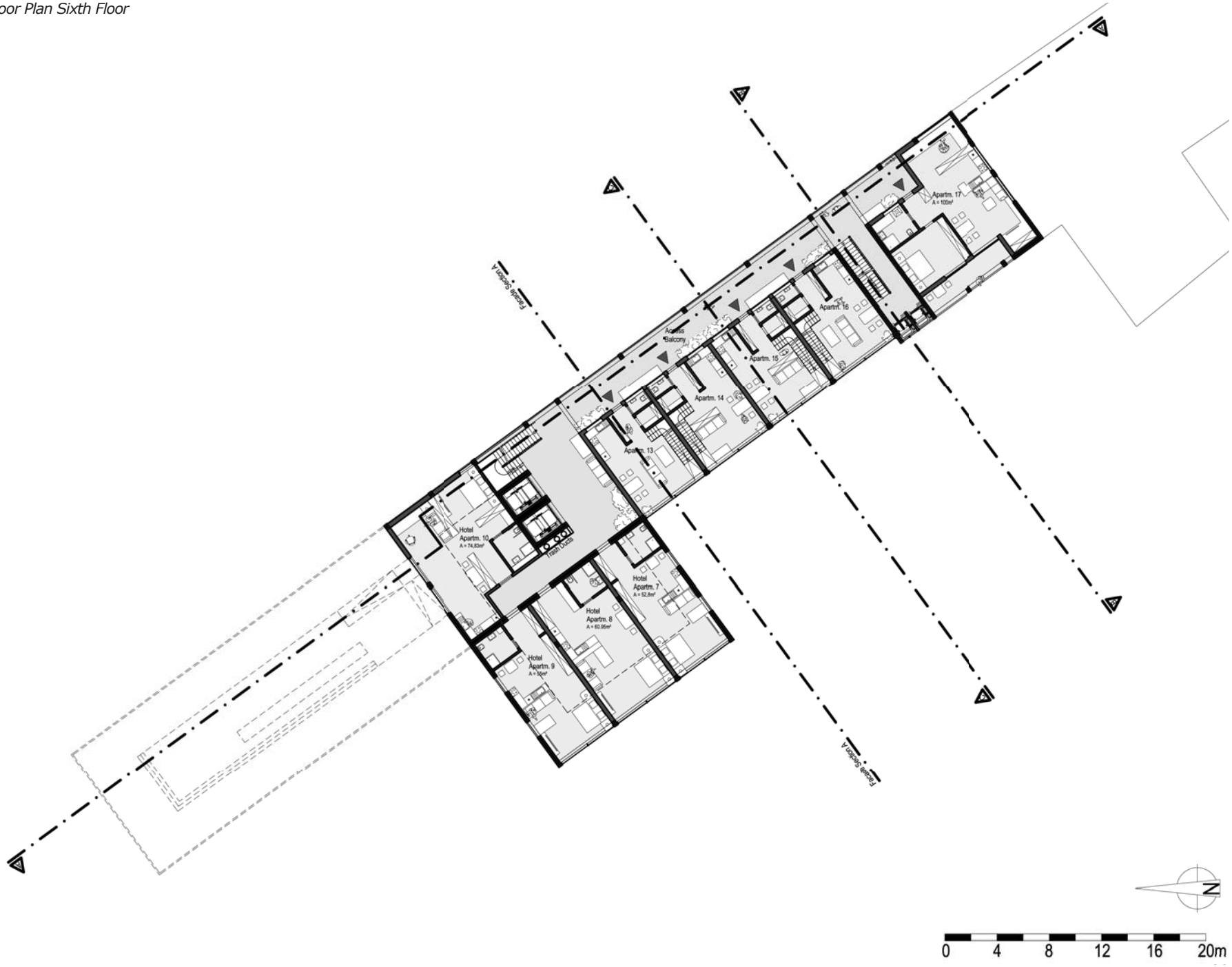
Fig. 162: Floor Plan Fifth Floor



Floor Plan Sixth Floor

Inhabitants or hotel guests can reach this floor again by either of the two developing cores. In this floor, the residential complex is identical to the floors underneath. Incorporated into the existing structure, it again has a new set of duplex apartments, and therefore and access balcony on the east side. This is the last and highest access balcony in the building and offers an especially fantastic panorama view over *Graz*.
Likewise to the floors with hotel apartments underneath, this floor also has the three fairly identical extended-stay hotel apartments. In addition, one can find another type of hotel apartment next to the elevator shaft, situated at the place where the lobby for the office complex is located in the subjacent floors. This type of hotel apartment exhibits the most luxurious type of all of them. It is the biggest of them all and offers a great view on the open roof terrace as well as the northern part of the city.

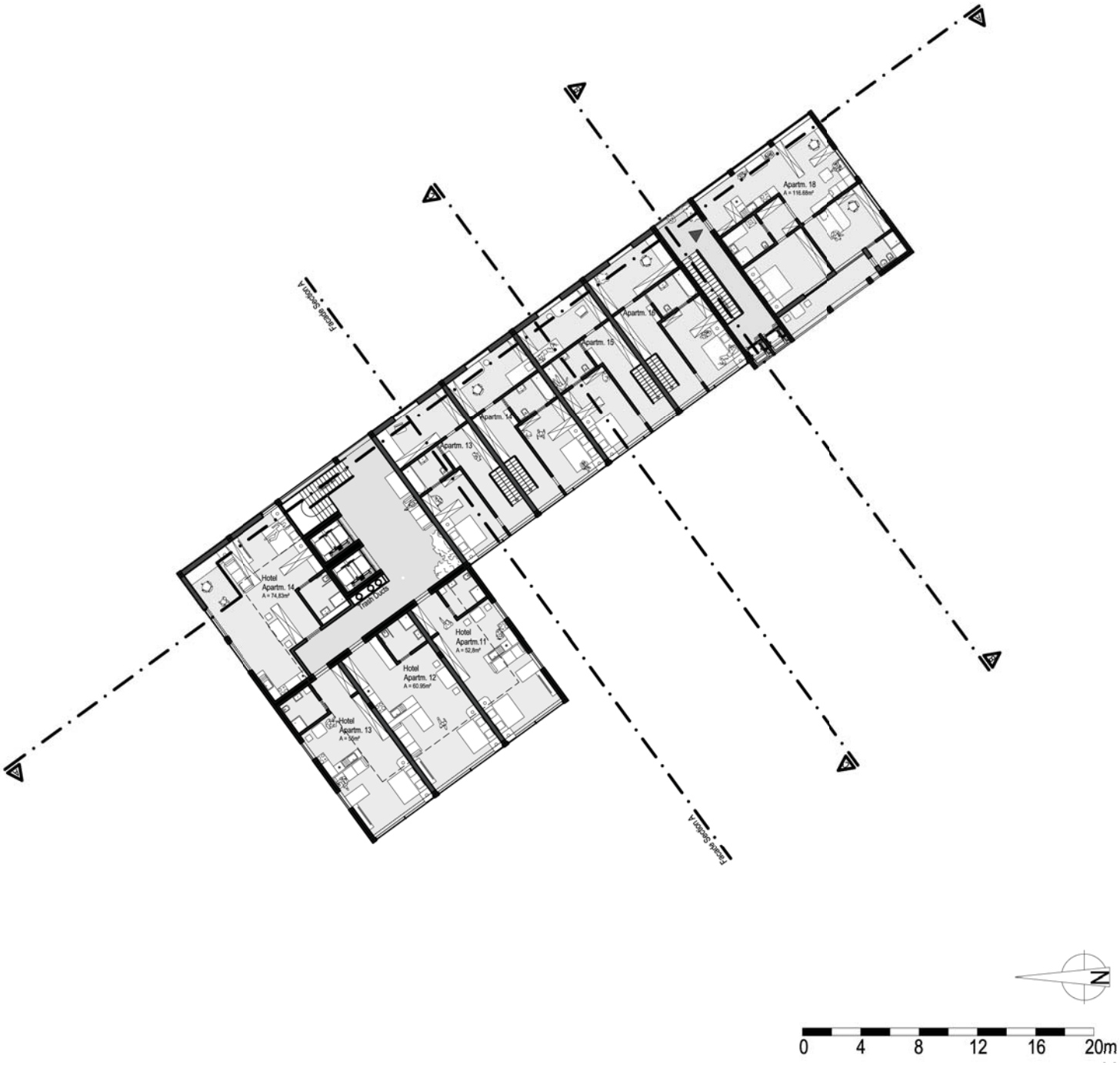
Fig. 163: Floor Plan Sixth Floor



Floor Plan Seventh Floor

The topmost floor continues the spatial organization concept. It too has four hotel apartments, which are accessible through the entrance area next to the staircase and elevators. This floor also contains the second stories of the residential duplex apartments. Thus there is no access balcony. The single-story apartment in the south of the building is only accessible by the second developing core. Therefore, this area of the second core is basically only used by the inhabitant of this apartment, and thus unofficially becomes a part of the apartment itself.

Fig. 164: Floor Plan Seventh Floor



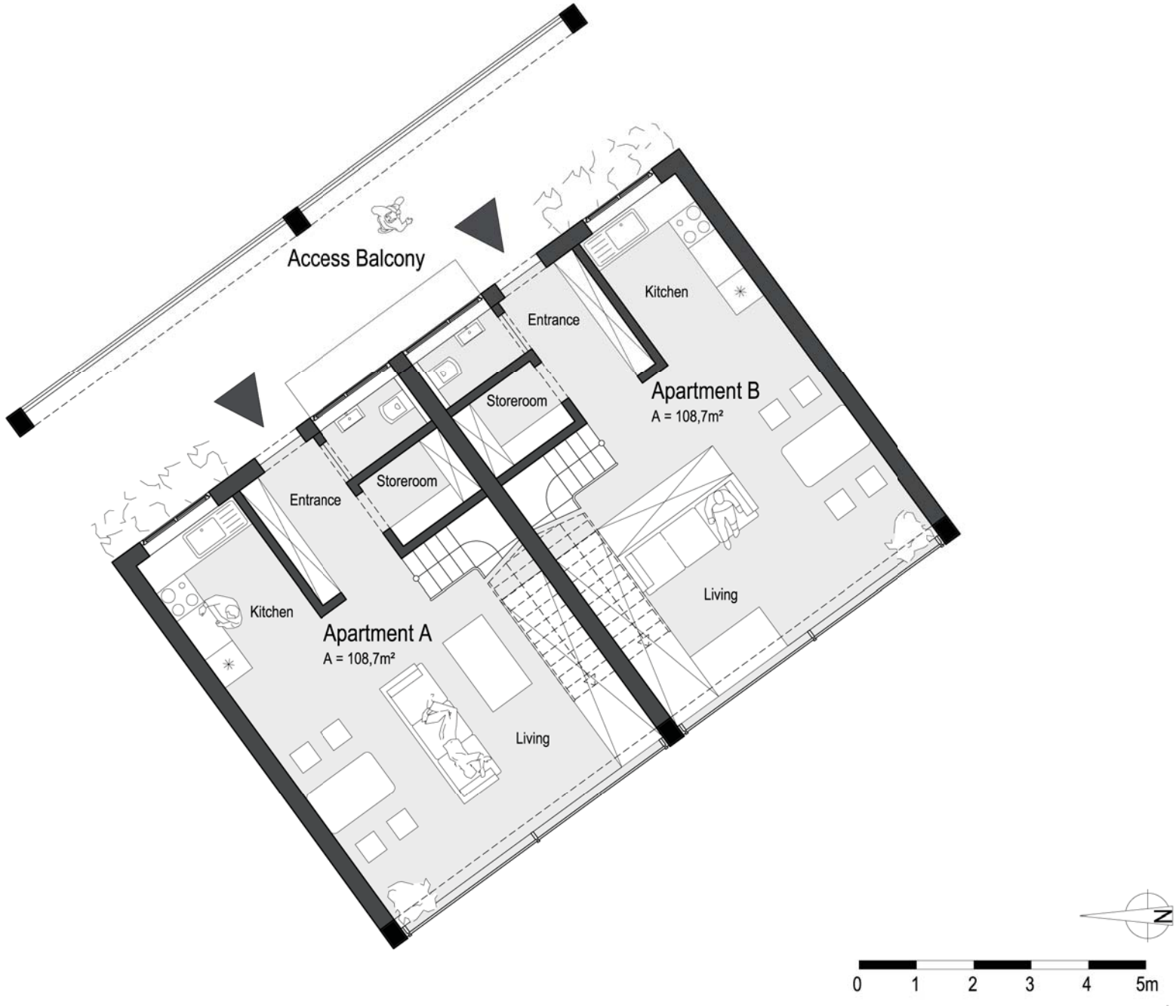
Floor Plan Apartment A and B - First Story

This plan shows the first story of the duplex apartments in the residential complex. There are six apartments of the type A and six apartments of the type B in the entire building. Thus the high-rise has a total of twelve duplex apartments. Together with the second story, each duplex apartment has a total gross floor area of about 108,7m².

Apartments of the type A are: Apartment 1, 4, 7, 10, 13, and 16.
Apartments of the type B are: Apartment 2, 3, 8, 9, 14, and 15.

The entrance to each apartment is on the first story. The access balcony on the east side of the building connects the two developing cores and enables the reachability of every apartment. Due to the generous width of the access balcony itself (approximately 3m), the entrance area of each individual apartment is not necessarily inside of the apartments, but becomes part of the balcony as well. Therefore each section of the access balcony in front of the apartment entrance unofficially belongs to the inhabitants of the accordingly apartments. This, however, is an effect respectively quality that is not unwelcomed but rather encouraged.
The access balcony has another crucial effect. In addition to the secondary rooms within the apartment (toilet, storeroom, and kitchen) which are all located close to the entrance, the balcony too represents a buffer zone between the rather noisy *Wiener Straße* and the habitable rooms of the apartment. Thus the living area is located on the quieter and sunnier west side. The facade on this side of the building has a room high window glazing, which is partially openable and contains an included sunscreen (see also: facade section). The living room, which is directly connected with the kitchen booth, becomes perhaps the room where the inhabitants will stay most of the time.

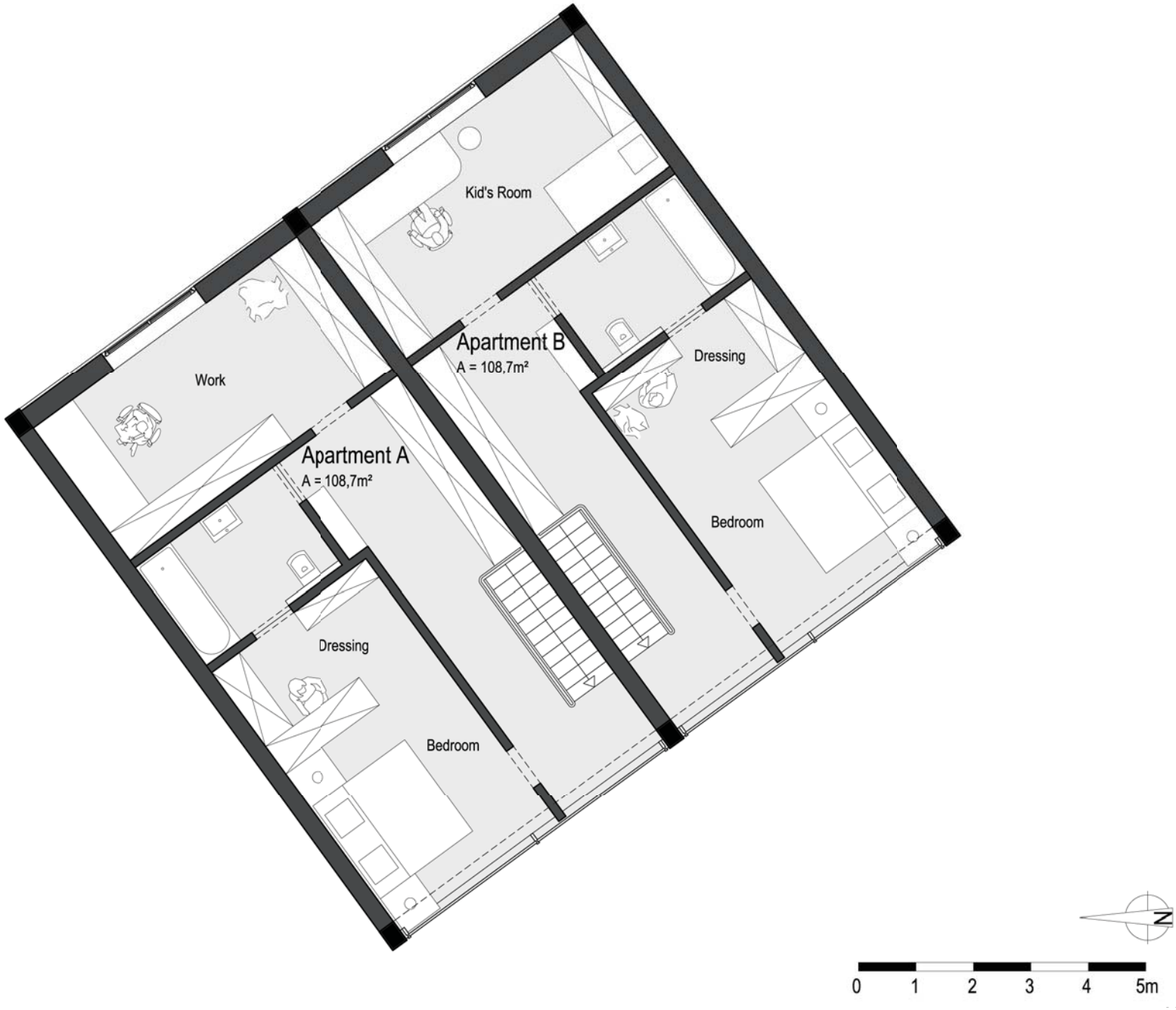
Fig. 165: Floor Plan Apartment A and B - First Story



Floor Plan Apartment A and B - Second Story

The spatial arrangement of the second story of the duplex apartments attempts to deal with the difficult situation of the surrounding environment as well. The east side of the building has the disadvantage of facing the noisy *Wiener Straße*, but also the advantage of providing a fantastic panorama view over the east side of the city. Therefore, the bedroom with a demand of a quiet surrounding is located at the sunnier west side of the building, whereas the rooms on the east side are more likely to be less disturbed by the noise influence. These rooms include a work room or a kid‘s room as well as the bathroom, which is moreover located directly above the toilet and storeroom of the first story of the apartment, which makes it easier to deal with the conduction of the wastewater. The bathroom is either reachable from the corridor or from the bedroom. The bedroom is separated from the bathroom with a dressing area respectively wardrobe.

Fig. 166: Floor Plan Apartment A and B - Second Story



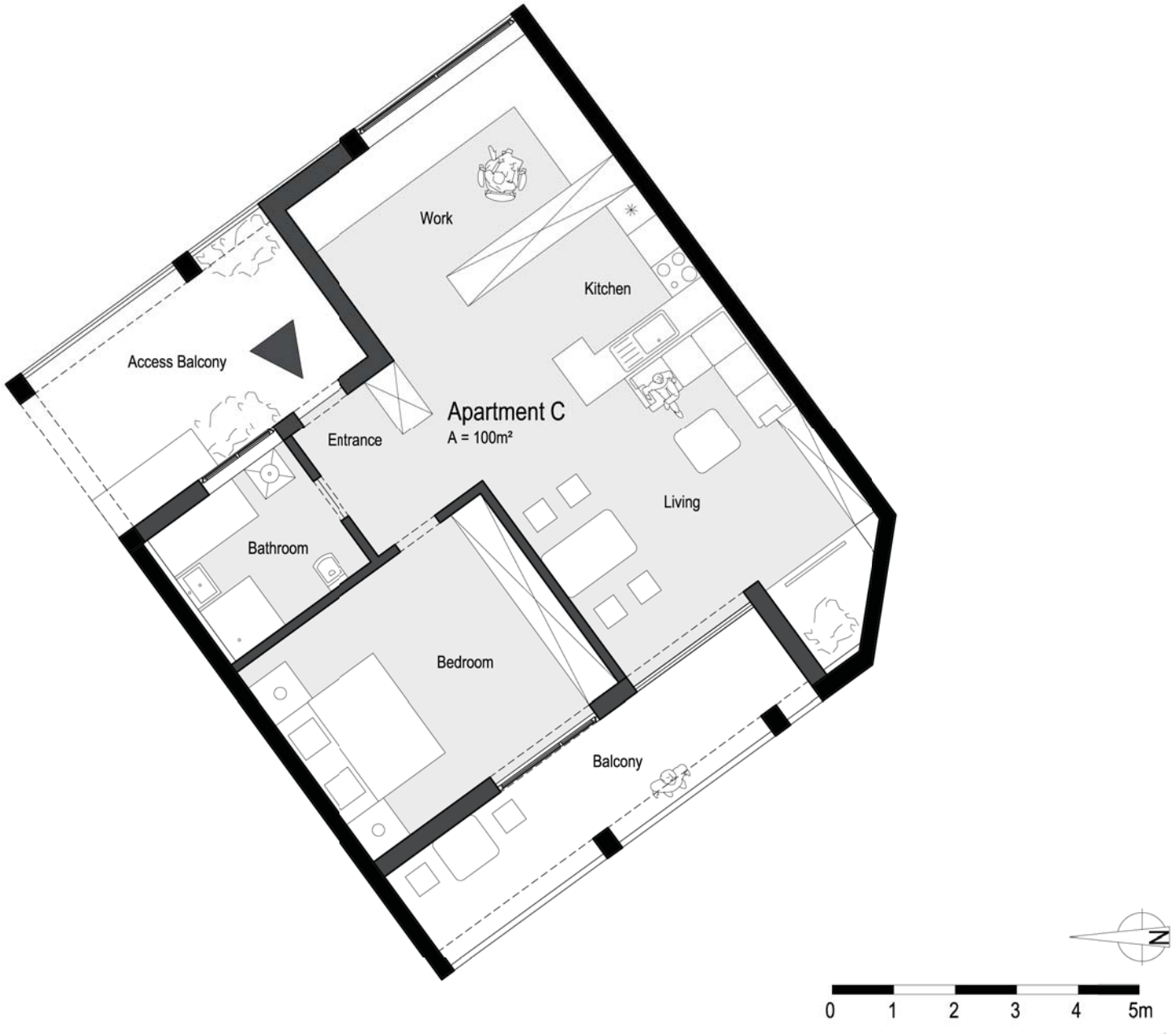
Floor Plan Apartment C

Besides the twelve duplex apartments, there are also six single-story apartments located adjacent to the second developing core in the south. These six barrier-free apartments come in two types as well. The plan on the right page depicts the apartment of the type C.

Apartments of the type C are: Apartment 5, 11, and 17.

Due to the already mentioned triangular cut into the building in the first four floors of the high-rise (because of the bordering residential edifice), not all of the type C apartments are totally identical. Their only difference is the corner in the southwest, where the cut exists. But apart from that, all three of them share the same floor plan organization.
The entrance to the apartment of this type is also from the access balcony. Here, the effect of adopting the space on the access balcony and thus making it part of the apartment gets even stronger. This is due to the fact that this part of the balcony only serves to access the apartment of the type C, hence unofficially becoming an additional balcony for the apartment next to the balcony inside the flat on the west side.
The spatial organization deals with the same principles as the apartments of the type A and B. The bedroom and the living room are both situated at the quieter and sunnier west side of the building and are directly connected with the balcony. The secondary rooms like the bathroom and the kitchen separate those habitable rooms from the noisy *Wiener Straße*. A work room is located on the east side of the apartment.

Fig. 167: Floor Plan Apartment C



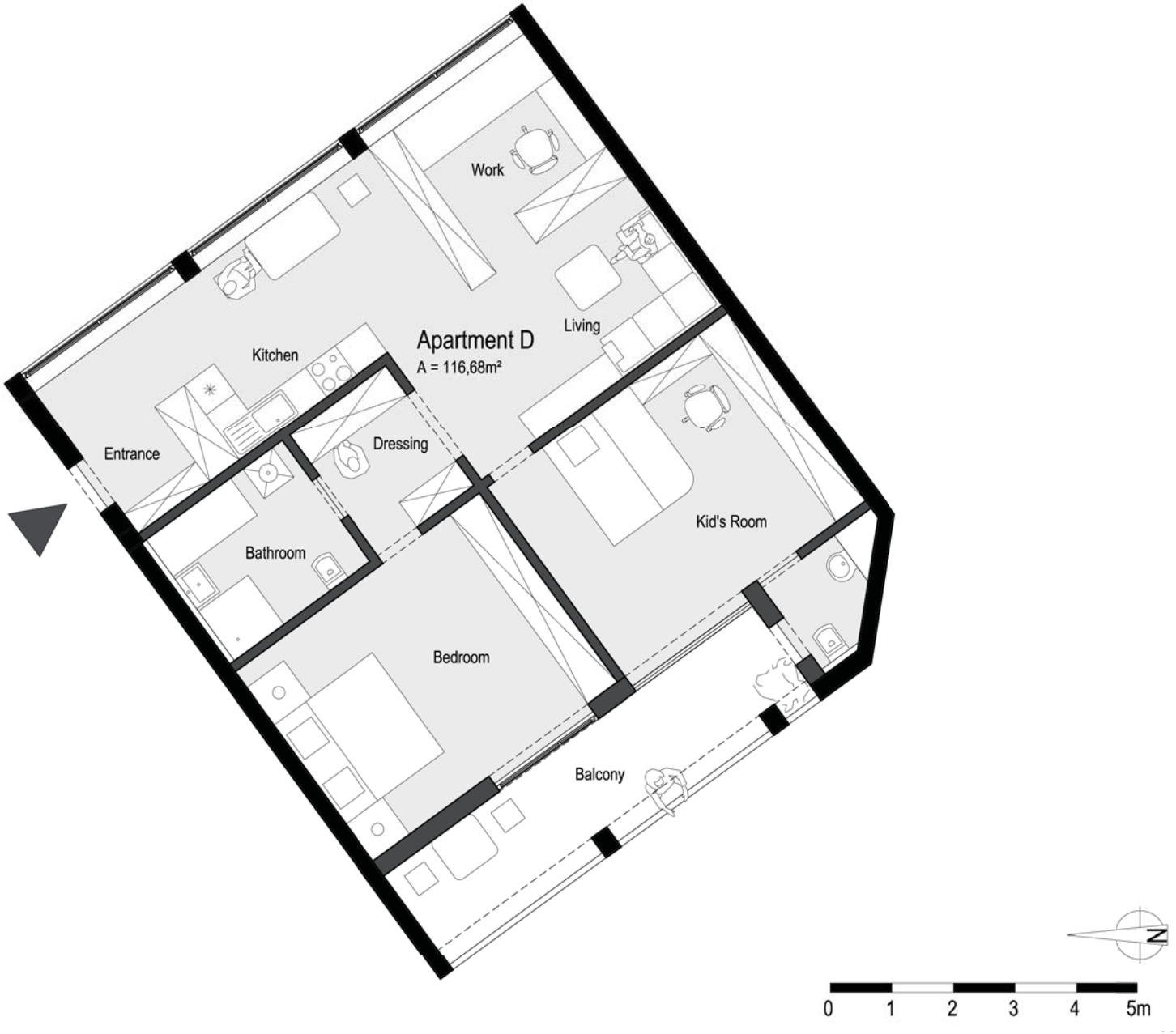
Floor Plan Apartment D

In addition to the three single-story apartments of the type C, there are also three single-story apartments of the type D.

Apartments of the type D are: Apartment 6, 12, and 18.

Their spatial arrangement differs from the apartment of the type C in that they are not developed by an access balcony. The entrance to these apartments is directly at the second developing core. This results in additional space for the flat and therefore makes the total gross floor area approximately 116,68m². Thus this type of apartment is the biggest type in the building.
Likewise to the other apartments, the individual rooms are here also organized according to their use. Secondary rooms serve as buffer zones between the noisy east side and the rooms with a demand of quiet surroundings. The bedroom and the kid‘s room are both connected to the balcony on the west side of the building. From the bedroom one can reach the bathroom via a small dressing room or wardrobe. The second bedroom respectively the kid‘s room is also equipped with a small bathroom. The living room is connected with the kitchen and the dining room on the east side, which has three large windows. Thus the fantastic panorama view of the city can be enjoyed from there.

Fig. 168: Floor Plan Apartment D



Floor Plan Extended Stay Hotel Apartment A, B, and C

Besides the office complex and the residential apartment complex, the extended stay hotel apartments represent the third main function of the building. There are a total of fourteen such apartments, which are intended for long-term visits. Thus their design and spatial organization as well as the gross floor area and the additional amenities should differ from regular hotel rooms, in that they should provide a better living condition for the guests, who have to dwell there for an extended amount of time.
In this building the apartments for long-term visitors are on the average between 50 and 60m², which can be compared by size to regular residential apartments in the city of Graz. Their spatial arrangement is fairly similar.

Hotel apartments of the type A are: Hotel apartment 3, 6, 9, and 13
Hotel apartments of the type B are: Hotel apartment 2, 5, 8, and 12
Hotel apartments of the type C are: Hotel apartment 1, 4, 7, and 11

Each apartment can be entered by the entrance area at the central shared core. Next to the entrance, there is a rather large bathroom, which is even barrier-free in the apartment of the type B. The bedroom and living area are on the west side of the building which shares the same facade system as the facade at the residential apartments. The living room is separated from the entrance by a spacious kitchen and dining area.
Apartment A and B have additional window openings on the south respectively north side of the high rise. Apartment B, on the other hand, is only exposed to natural light by the window glazing facade on the west side.

Fig. 169: Floor Plan Hotel Apartment A, B and C

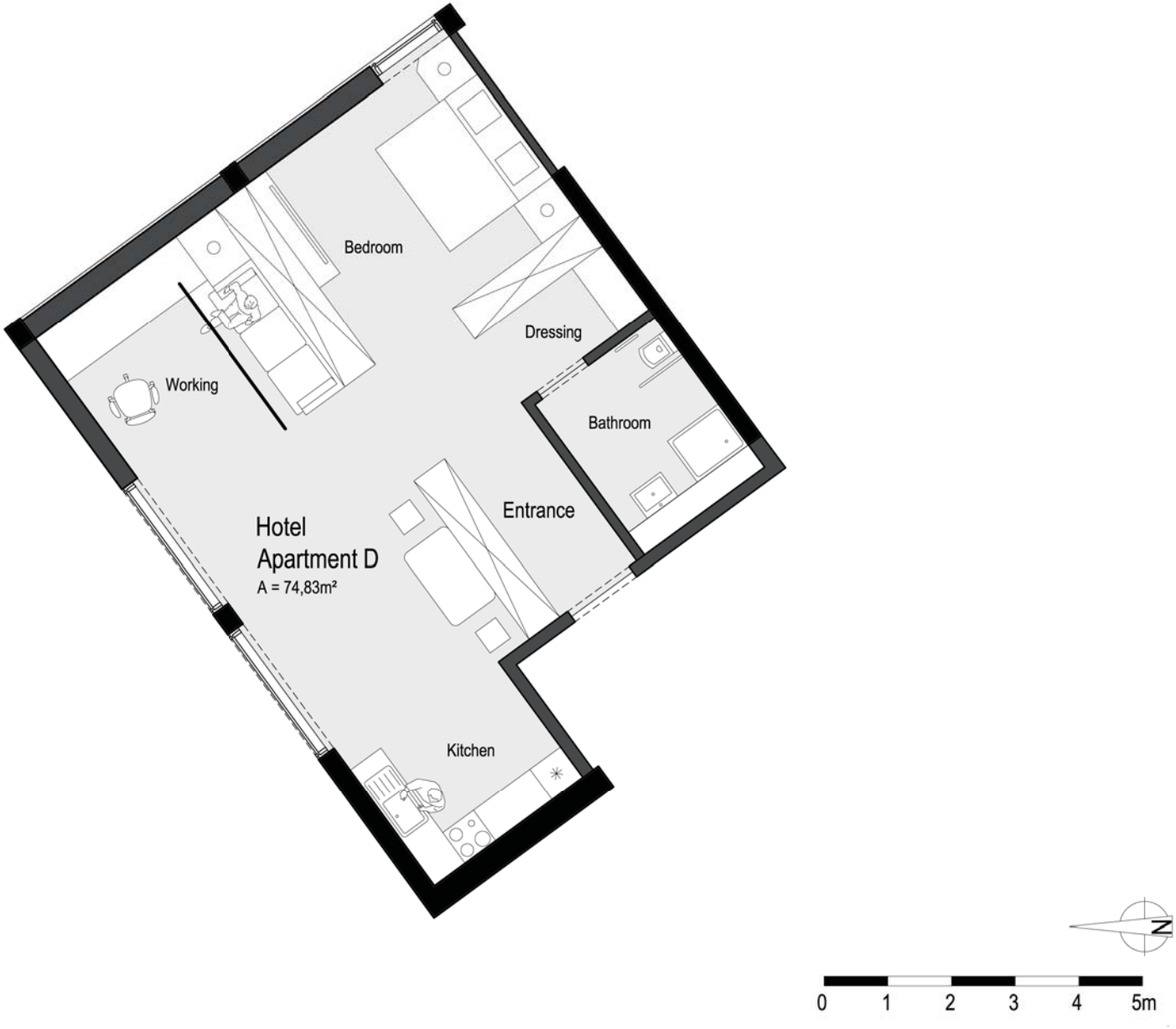
Floor Plan Extended Stay Hotel Apartment D

There are only two hotel apartments of the type D.

Hotel apartments of the type D are: Hotel apartment 10 and 14

They are the biggest hotel apartments in the building and also have the most prominent location within the high-rise. Situated directly above the recreational floor with the roof terrace, they offer their guests a fantastic view to the north of the district as well as down on the recreational space. These apartments can be reached from the entrance area next to the huge elevators at the central core. With their gross floor area of about 74,83m², they can easily fulfill the demand of spacious long-term hotel rooms.
The bedroom is, despite as in all other apartments in the high-rise, located at the east side of the building. However, due to the height of the floor (sixth and seventh floor) and the proper construction of the exterior wall as well as the window, the noise impact doesn't influence the room negatively. The bedroom is separated from the bathroom with a dressing area. On the north side of the building there is a kitchen as well as a dining area and living respectively working area.

Fig. 170: Floor Plan Hotel Apartment D



Section A

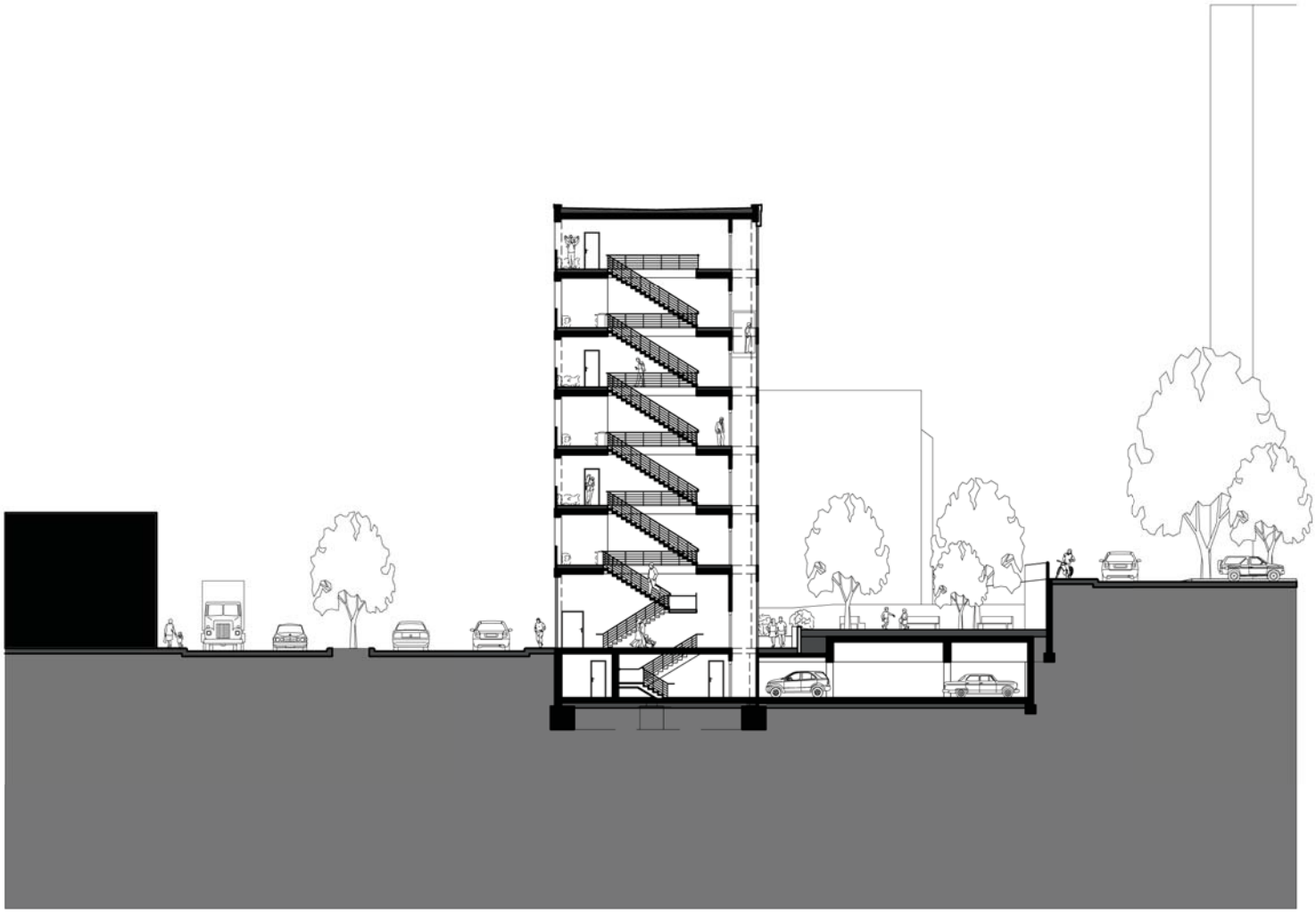
This section shows the vertical development of the staircase at the central shared core. Beginning at the entrance hall in the first floor, the staircase reaches the topmost floor and enables both an access to each individual lobby of the office complex in the north, as well as to the entrance areas and the access balconies in the residential complex in the south. Moreover, the staircase also leads directly to the open recreational roof terrace. The second developing core also enables to reach all floors of the building including the basement. Between those two developing cores, the section cuts through the access balconies and the second stories of the duplex apartments. Left to the second smaller developing core are the single-story apartments. Moreover, this section demonstrates the prominent location of the two hotel apartments of the type D within the building. They are located on top of the glazed central core directly above the roof terrace.
In the north next to the entrance hall, the section cuts through the open fore court underneath the office floors.

Fig. 171: Section A

Section B

Section B cuts through the second developing core and illustrates the buildings connection to the newly added underground garage and backyard. This smaller developing core is directly reachable from the sidewalk of the *Wiener Straße*. The staircase and the two elevator shafts (for eight persons each) develop all floors of the building.
In the backyard, the garden on the southern side of the plot is elevated as high as the rooms with the amenities in the first floor (laundry room, indoor swimming pool...). This raised level of this part of the backyard results in a skylight for the underground garage. Therefore natural light can reach the most southern part of the garage as well.

Fig. 172: Section B



Section C

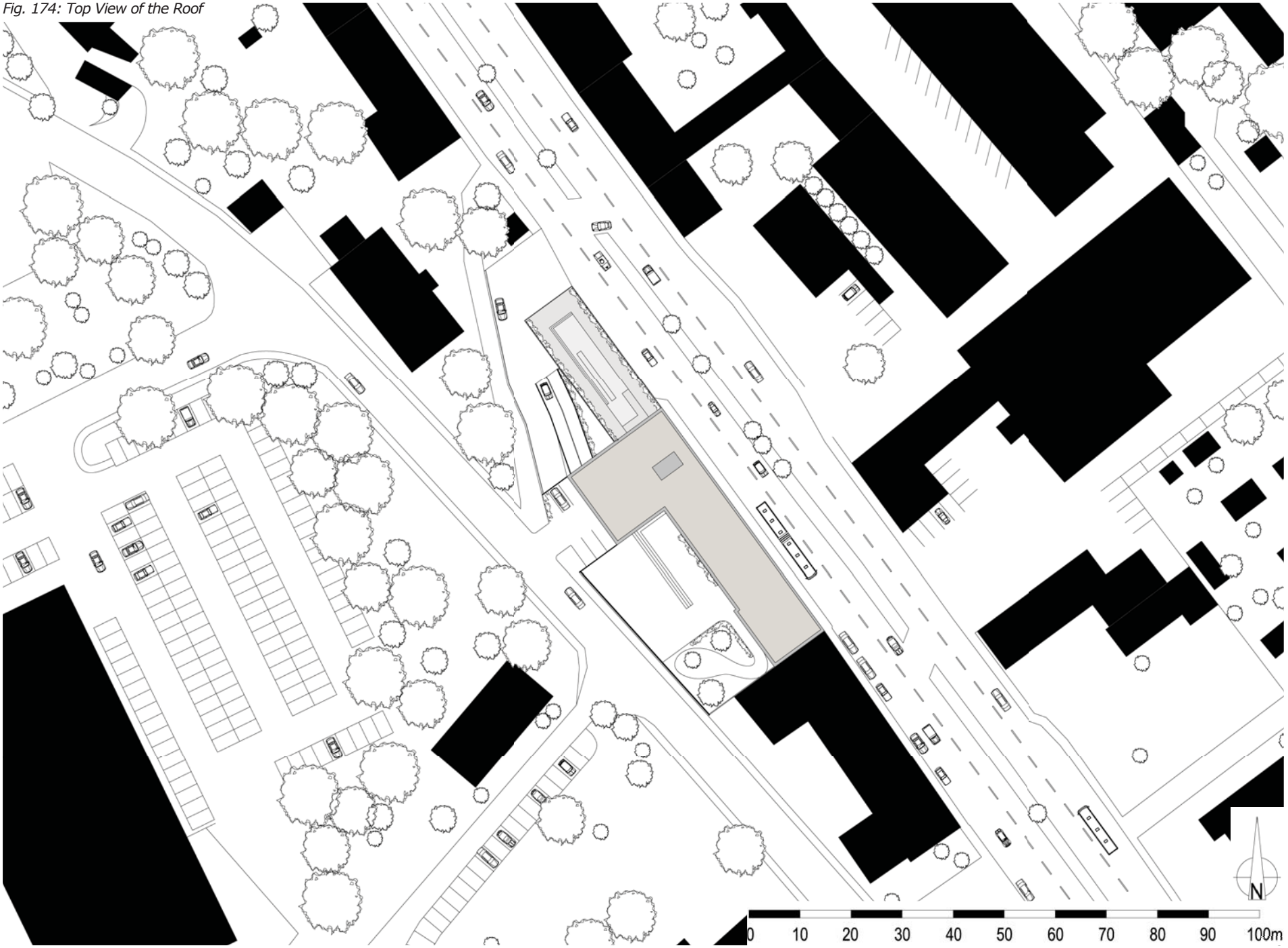
This section demonstrates the relation between the access balconies and the duplex apartments, and the connection between the underground garage and the existing structure. In the first floor, this section also illustrates the raised level of the rooms with the amenities (here: indoor swimming pool). Moreover, this plan shows the elevation of the newly added construction with the hotel apartments, which connects the *Josef-Pock-Straße* in the west with the existing high rise. Similar to the rest of the building, except the first floor, all facades of the high-rise are constructed with cement asbestos panels, which are also illustrated on the elevation of the new annex (see: facade section). The glazed central shared core can also be seen on the fifth floor.

Fig. 173: Section C

Top View of the Roof

The "fifth facade" of the building - the roof - is not kept in its original form of the current high-rise due to the worse condition of the old building and due to the fact that the construction of the roof during the first half of the last century does nowadays not meet the standards of the construction law. The current roof consisting of a wooden substructure and steel sheet covers without any thermal insulation is insufficient for the residential apartments underneath. Therefore a new roof is mounted on the existing structure.
The new roof is designed as a flat roof with gravel as the topmost constructional layer (see also: facade section). However, the elevator shafts of the two huge elevators at the central core are still visible on the roof. The edge of the roof is designed as a roof parapet for constructional and aesthetic reasons.
Moreover, besides the roof on the existing high-rise, the top view of the project also shows the roof terrace on top of the office complex, which continues the building line of the existing structure along the *Wiener Straße* to the north. Furthermore the connection between the *Josef-Pock-Straße* in the west and the existing high-rise is clearly visible as well.

Fig. 174: Top View of the Roof



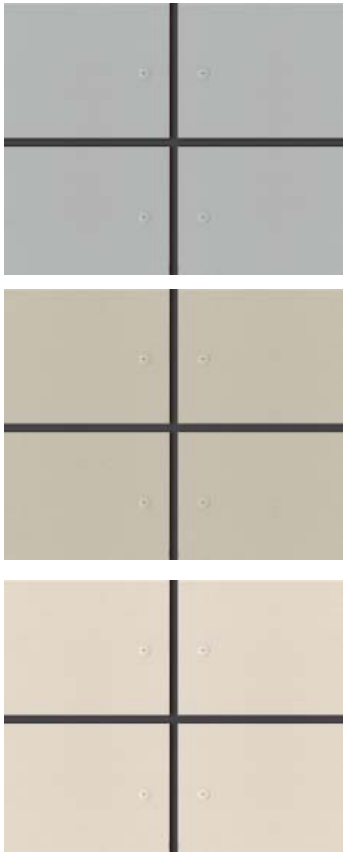


Fig. 175: Possible Coloring

The color of the cement asbestos panels is intended to be very bright. This differentiates them even more from the dark-grey appearance of the existing carrying structure. Three possible colors are demonstrated in the pictures above.

Elevation East

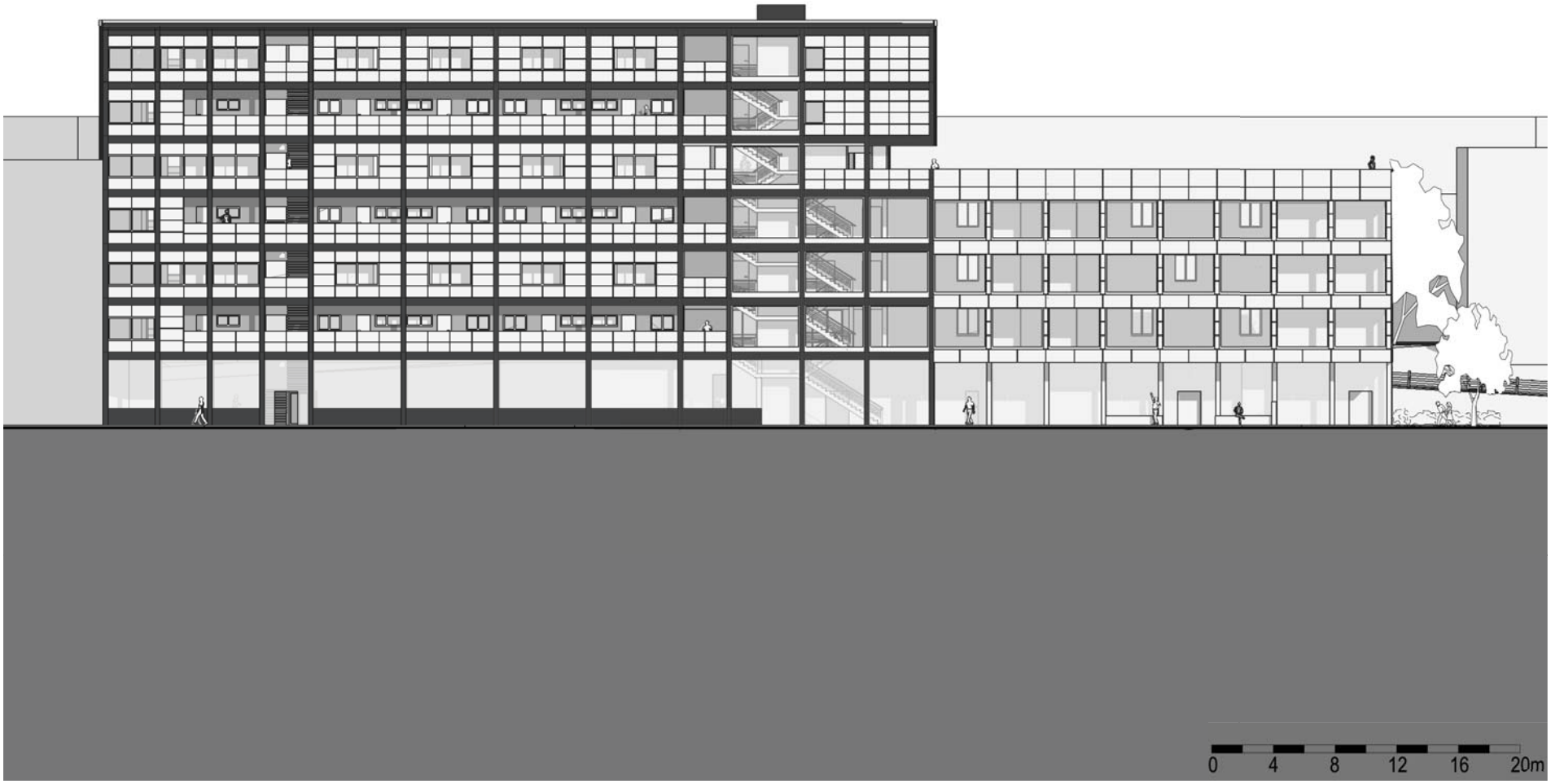
As demonstrated in the facade section (on page 124-) the appearance of the building is basically designed in two different ways. The front side (the side in the east facing the busy *Wiener Straße)* differs from the backside (the side in the west facing the *Josef-Pock-Straße)* and the sides in the north and south. However, all facades of the building are constructed with cement asbestos panels. The current high-rise, which represents a modernist storage facility of the early 20th century, is also designed with white cement asbestos shingles as the final surface of the exterior walls. To keep the impression of the building as being an old storage facility, which has been revitalized with annexes and new functions, the project too uses this material as its final surface.

This elevation shows the unique facade on the front side of the building, which emphasizes the existing skeleton structure of the current high rise. The exterior walls on this side (apart from the facade of the newly added office complex in the north, which has the same facade as the other sides), are "pushed back" 50mm, therefore resulting in a discreet accentuated appearance of the existing carrying structure. The exterior walls as well as the railings are all uniformly covered with the cement asbestos panels.

This warehouse appearance, however, is contradicted by the exterior walls of the implemented residential apartments. Due to the access balconies, the location of those exterior walls is shifted back inside the building. This displacement distinguishes those exterior walls from the remaining cement asbestos walls. To increase this difference, the construction of those exterior residential walls, also differs from the remaining facade. Unlike all other facades of the building, here the walls of the residential apartments at the access balconies are designed as thermal insulation composite systems. Thus they appear as a colored uniform area in contradiction to the tiled appearance of the cement asbestos panels.

The newly added office complex in the north is, as previously mentioned, constructed in the same method as the other sides of the building. Here, the cement asbestos panels, which are in the same color and approximate same size as the remaining facades, are mounted around the room-high window glazing of the office floors. The first floor of the entire building is fully glazed.

Fig. 176: Elevation East



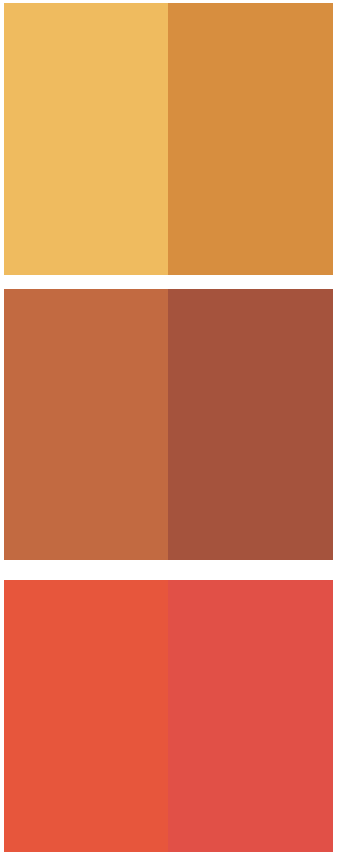


Fig. 177: Possible Coloring

In contradiction to the bright panels, the coloring of the thermal insulation composite system walls is intended to be more colorful and darker. The pictures above show possible colors (orange to red) for those exterior walls next to the access balconies.

Elevation North

The side of the building to the north has a suspenseful appearance. Pedestrians or cars coming from the north of the city can see this side from afar. As they are slowly approaching, the appearance of the building gradually reveals itself. The cantilevered northern corner of the office complex marks the beginning of the spacious roofed fore court, which emphasizes the outgoing look of the main entrance.
The facade of the office complex itself differs from the other facades on this side in that it has room-high window glazing, which enables a great view of the northern part of the district. Also visibly distinguishable is the roofed terrace. The glazed central shared core also aids in the visible differentiation of the recreational floor to the remaining floors.
Moreover, the maintenance elevator shaft on the roof of the building is also slightly visible from the north. This shaft is directly in the center of the existing structure and was used as a guideline for the spatial arrangement of the floor plans. The window openings of the extended stay hotel apartments of the type D, which are directly above the roof terrace on top of the office complex, are therefore aligned with the elevator shaft.

Fig. 178: Elevation North

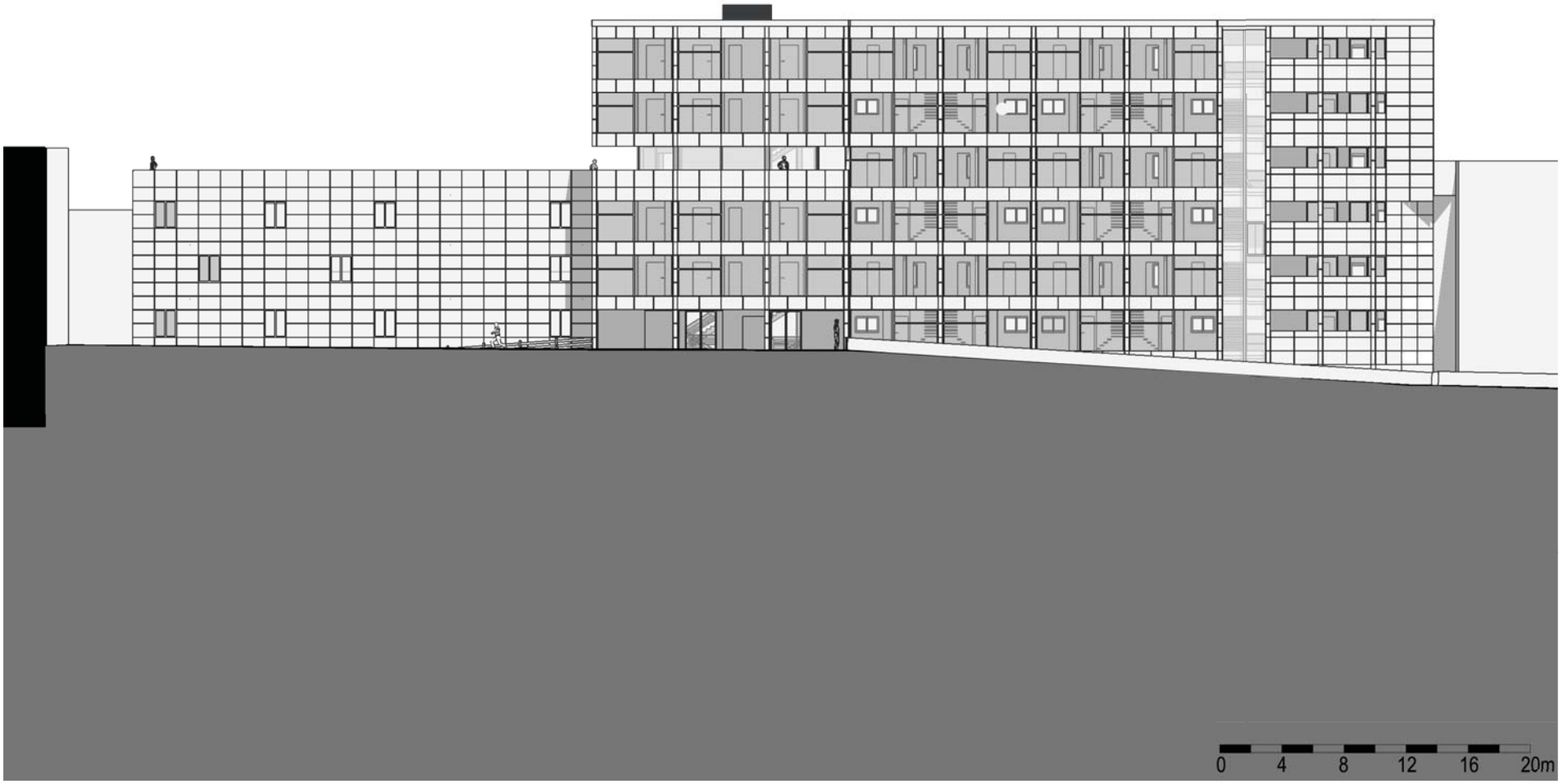
Elevation West

The backside of the building, the side facing the *Josef-Pock-Straße* in the west, is uniformly designed with cement asbestos panels, which are interrupted by window openings. However, those windows differ in size and appearance. The office complex in the north only has a dozen double-casement windows, which are mainly designed for the natural exposition of sunlight, as well as the transverse ventilation of the office floors. By contrast, the residential apartments and the hotel apartments are constructed as room-high window glazing, which are also partially openable and include a sunscreen.

The residential complex contains the fully glazed small elevator shafts at the second developing core. This shaft separates the duplex apartments from the single-story apartments, which are all equipped with an included balcony.

The annex with the hotel apartments includes the glazed central core, which can be seen on the fourth floor next to the roof terrace. The first level of this side, which is in fact the second floor, represents the entrance to the building from the *Josef-Pock-Straße*.

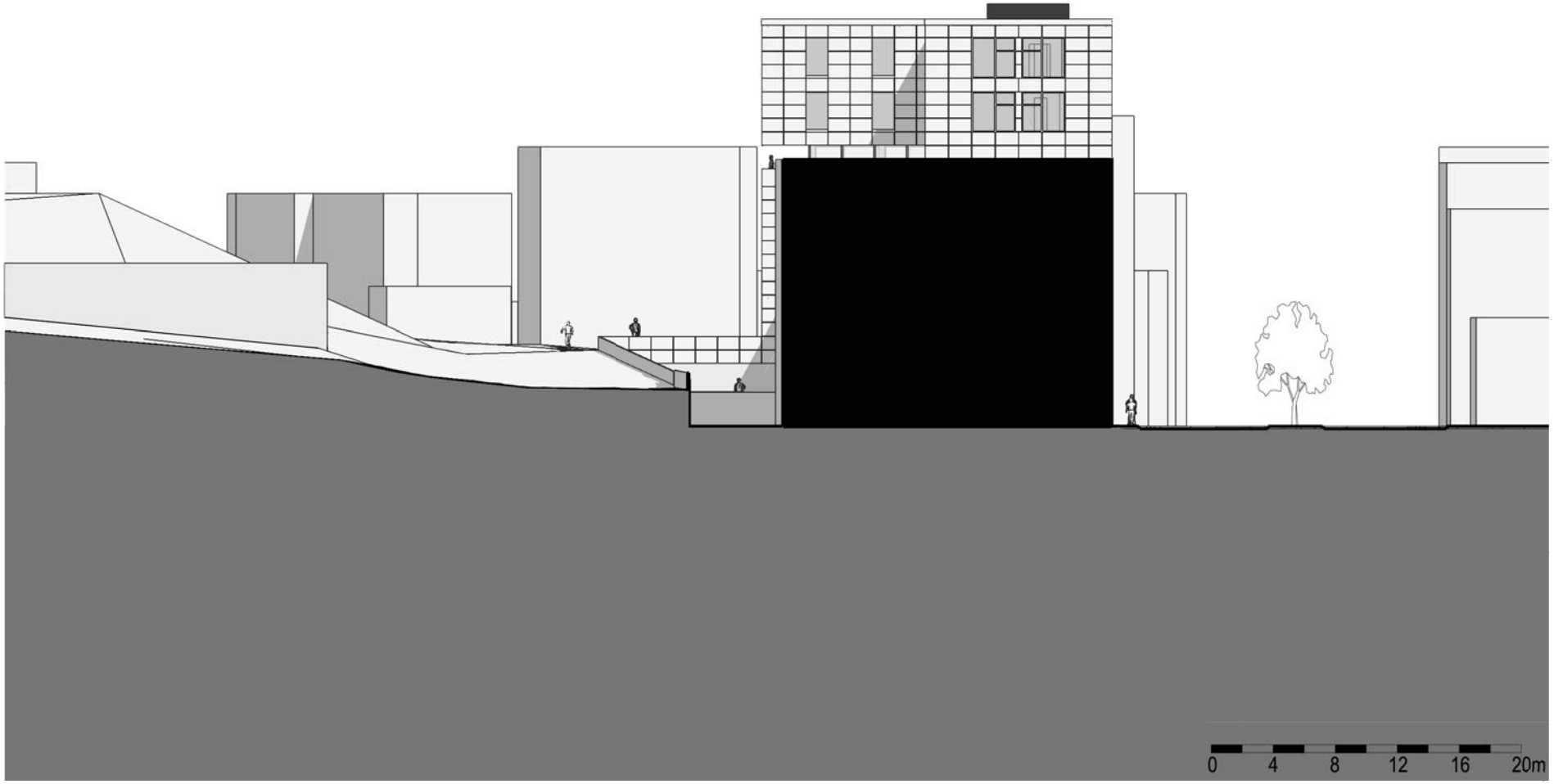
Fig. 179: Elevation West



Elevation South

The southern side of the building is only slightly observable, because of the five-story high neighboring residential building. Only the last two floors of the high-rise can be seen from the *Wiener Straße*. There, the single-story apartments have room-high window openings, which enable a far view to the south of the city along the street.

Fig. 180: Elevation South



Sketches

The illustrations on the following pages are sketches of the building in relation to the city structure.

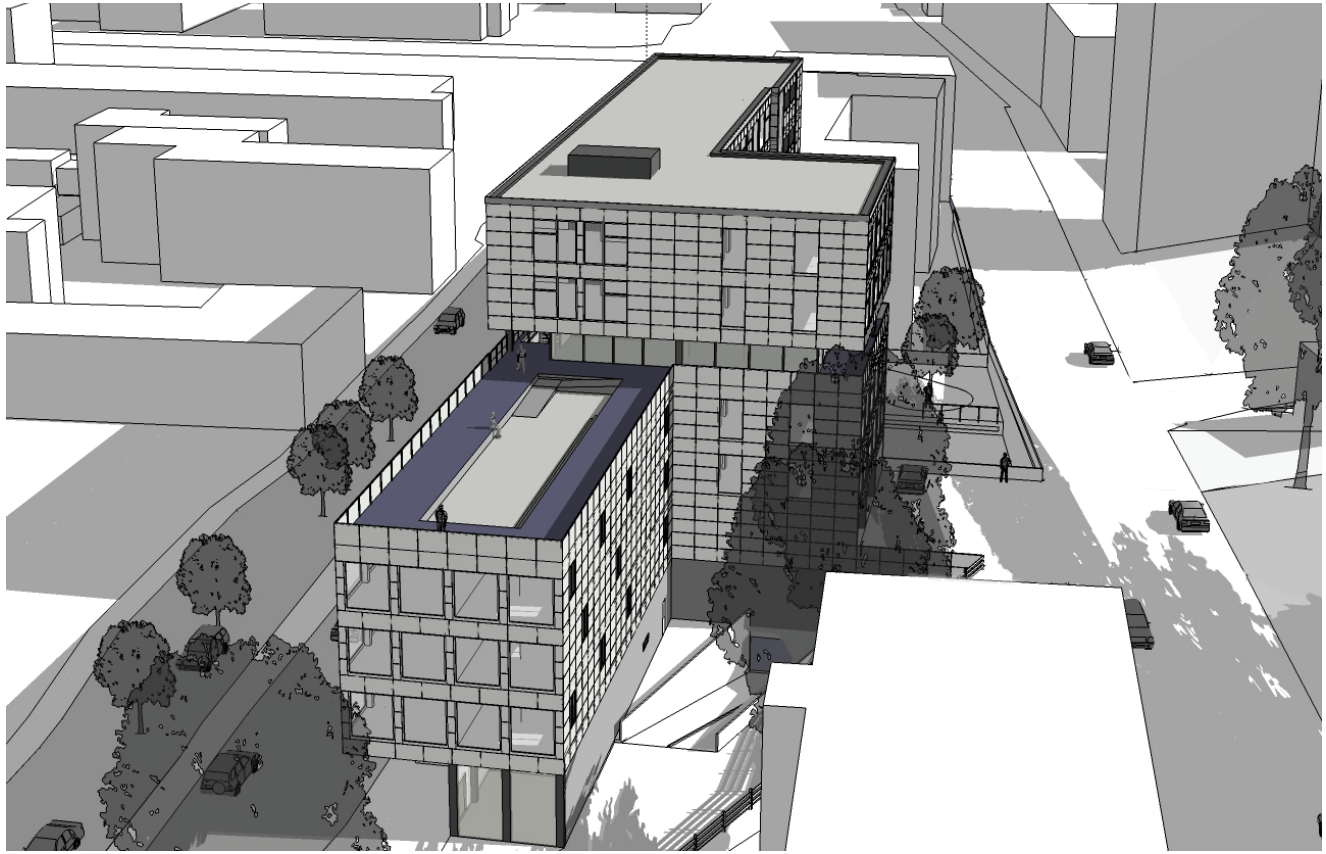


Fig. 181: Sketch North

Fig. 182, 183: Sketch East

Fig. 184, 185: Sketch East-South

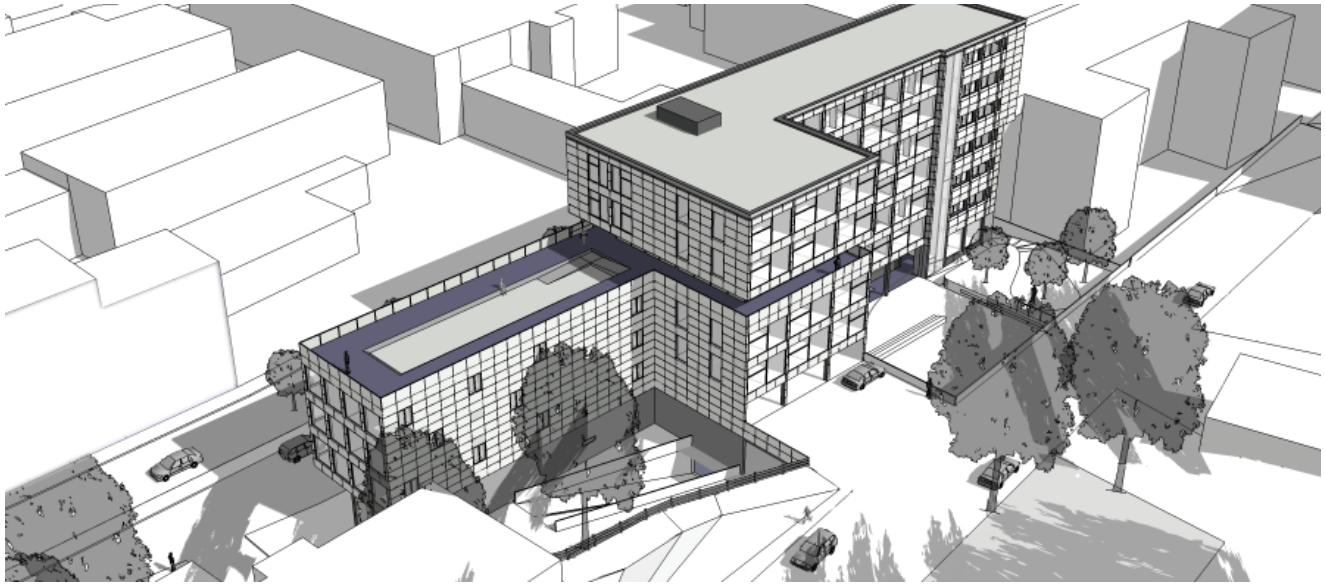


Fig. 186, 187: Sketch West and North

Renderings

Fig. 188: Rendering Northeast

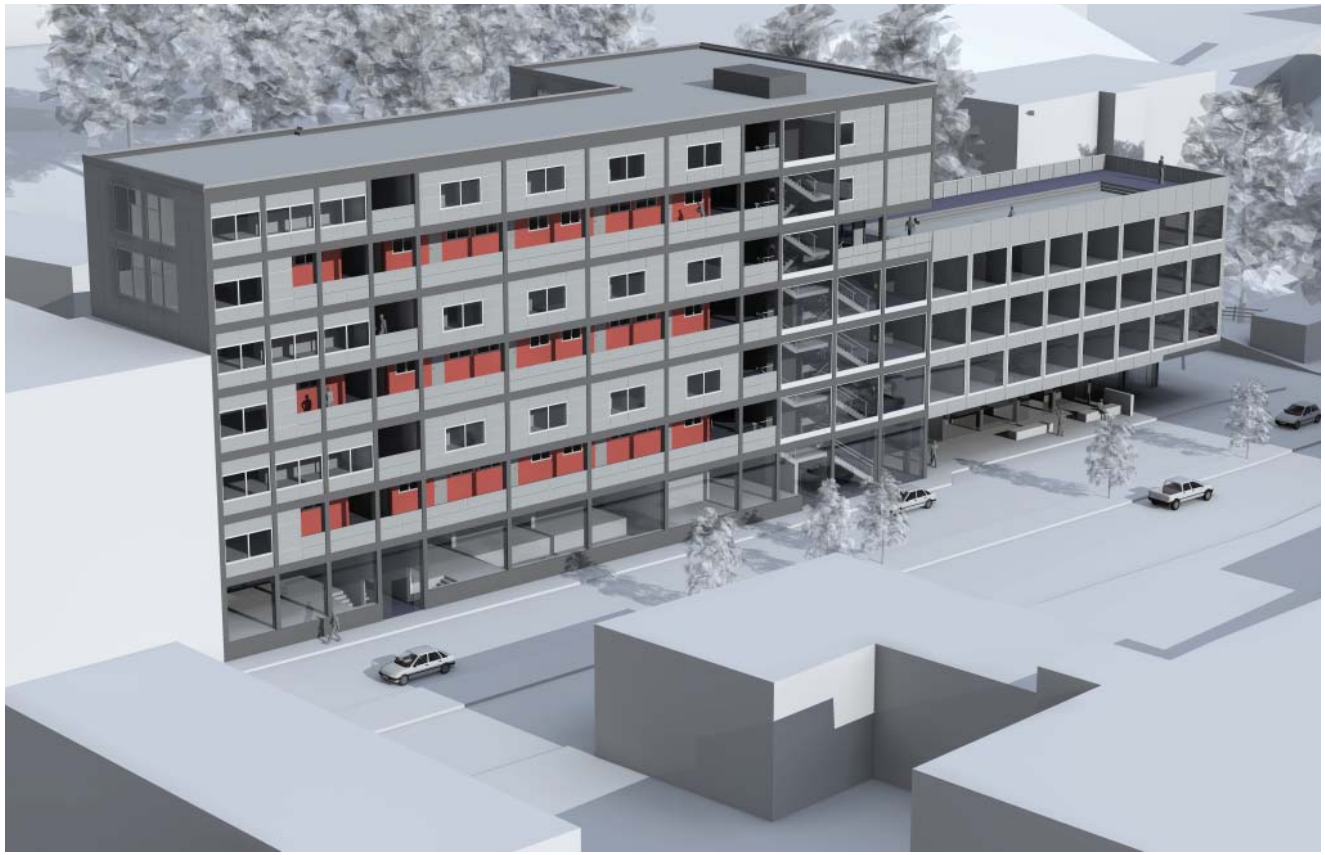


Fig. 189: Rendering Southeast

Fig. 190: Rendering Southwest

Fig. 191: Rendering Northwest

Fig. 192: Rendering in context - North

Fig. 193: Rendering in context - Southeast

Facade Section 1 - East

This facade section (scale 1:20) demonstrates the construction of the exterior walls of the residential apartments, as well as the access balconies.

right page: Fig. 194: Facade Section - Facade East

Exterior Apartment Wall

Interior plaster	0,5cm
Gypsum plaster board	1,25cm
Thermal Insulation (with installations)	3cm
Steam brake	0,2cm
Metal stud frame CW50 (filled with insulation)	5cm
Metal stud frame CW100 (filled with insulation)	10cm
Gypsum plaster board	1,25cm
EPS insulation	7cm
Aluminum substructure	5cm
Cement asbestos panels	0,8cm

Ceiling - Ribbed Slab

Parquet flooring	2cm
Cement screed	6cm
Separating foil	0,1cm
Impact sound insulation	3cm
Thermal Insulation	5cm
Separating foil	0,1cm
Equalizing layer	3cm
Ribbed reinforced concrete slab	48cm
Suspended gypsum ceiling	1,25cm
Impact sound insulation (on top of suspended ceiling)	5cm

Interior
Work

Ceiling - Ribbed Slab

Parquet flooring	2cm
Cement screed	6cm
Separating foil	0,1cm
Impact sound insulation	3cm
Thermal Insulation	5cm
Separating foil	0,1cm
Equalizing layer	3cm
Ribbed reinforced concrete slab	48cm
Accompanying insulation	10cm
Suspended metal panels	1,25cm
Thermal insulation (on top of suspended ceiling)	10cm

Interior
Entrance

Exterior Apartment Wall

built as a thermal insulation composite system:

Interior plaster	0,5cm
Gypsum plaster board	1,25cm
Steam brake	
Metal stud frame CW75 (filled with insulation)	7,5cm
Metal stud frame CW75 (filled with insulation)	7,5cm
Gypsum plaster board	1,25cm
EPS insulation	10cm
Finishing coat	0,5cm

Railing with attached
cement asbestos shingles on both sides

Exterior
Access Balcony

Ceiling - Ribbed Slab

Casted artificial resin	0,6cm
Cement screed	5cm
Water bearing foil	0,2cm
Separating foil	0,1cm
Sealing foil	0,2cm
Sloping thermal Insulation	17 - 14cm
Separating Foil	0,2cm
Ribbed reinforced concrete slab	48cm
Accompanying insulation	10cm
Suspended gypsum ceiling	1,25cm
Impact sound insulation (on top of suspended ceiling)	5cm

Interior
Work

Exterior
Access Balcony

Facade Section 2 - West

This facade section (scale 1:20) shows the construction method of the exterior walls of the residential apartments with their room-high window openings.

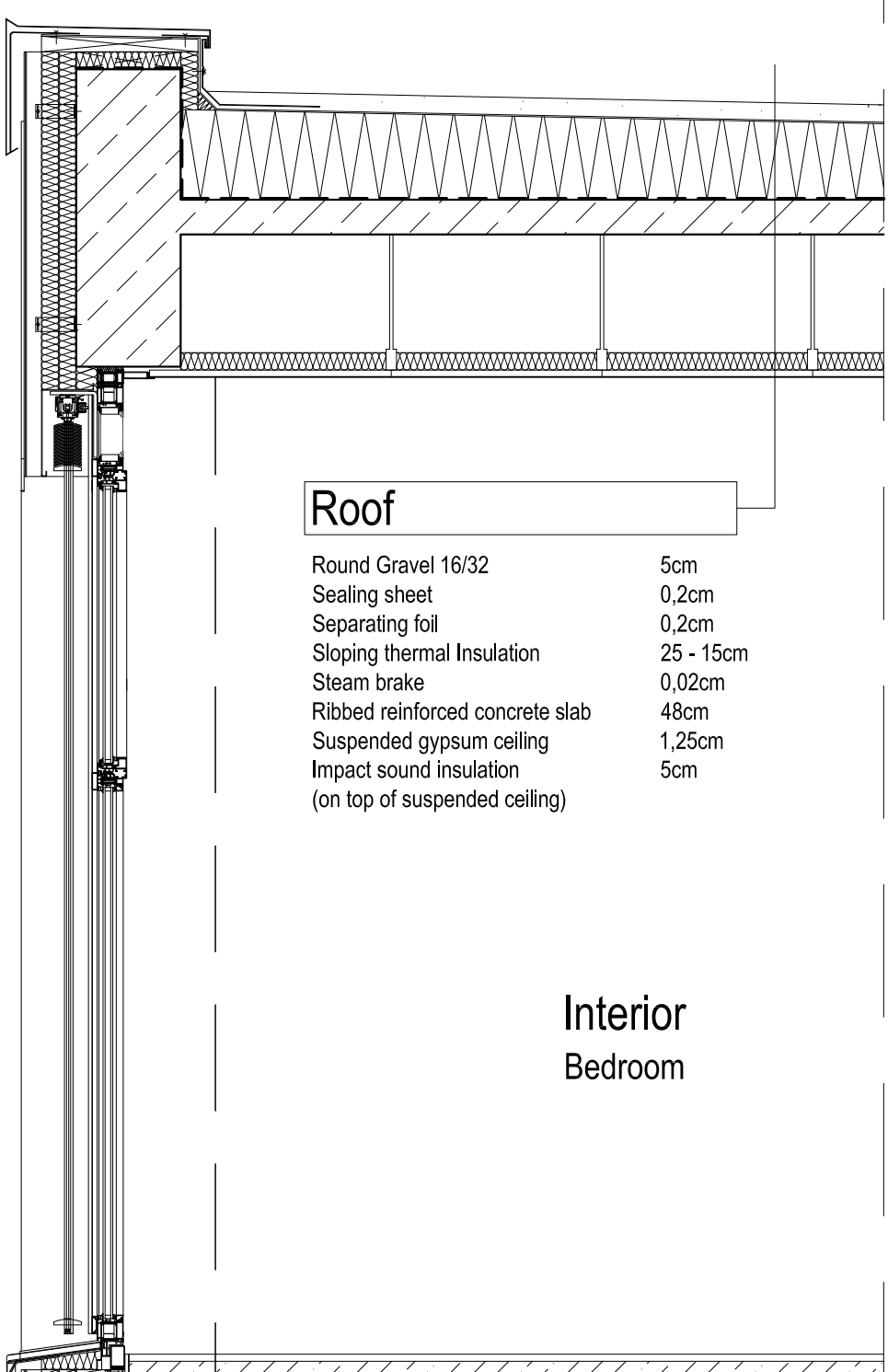
right page: Fig. 195: Facade Section - Facade West

Exterior

Interior
Bedroom

Roof

Round Gravel 16/32	5cm
Sealing sheet	0,2cm
Separating foil	0,2cm
Sloping thermal Insulation	25 - 15cm
Steam brake	0,02cm
Ribbed reinforced concrete slab	48cm
Suspended gypsum ceiling	1,25cm
Impact sound insulation (on top of suspended ceiling)	5cm



Exterior Wall

Reinforced concrete Slab	30cm
Thermal insulation	12cm
Aluminum substructure (attached to concrete slab)	
Aluminum bearing rail	5cm
Air layer between bearing rail	5cm
Cement asbestos panels	0,8cm

Exterior

Interior
Living

Ceiling - Ribbed Slab

Parquet flooring	2cm
Cement screed	6cm
Separating foil	0,1cm
Impact sound insulation	3cm
Thermal Insulation	5cm
Separating foil	0,1cm
Equalizing layer	3cm
Ribbed reinforced concrete slab	48cm
Suspended gypsum ceiling	1,25cm
Impact sound insulation (on top of suspended ceiling)	5cm

Exterior

Interior
Bedroom

Exterior

Interior
Living

Facade Section 3 - First floor and Foundation

This facade section (scale 1:50) depicts the connection of the underground garage with the existing high-rise, and the construction of the raised level with the indoor swimming pool.

right page: Fig. 196: Facade Section - First Floor and Foundation

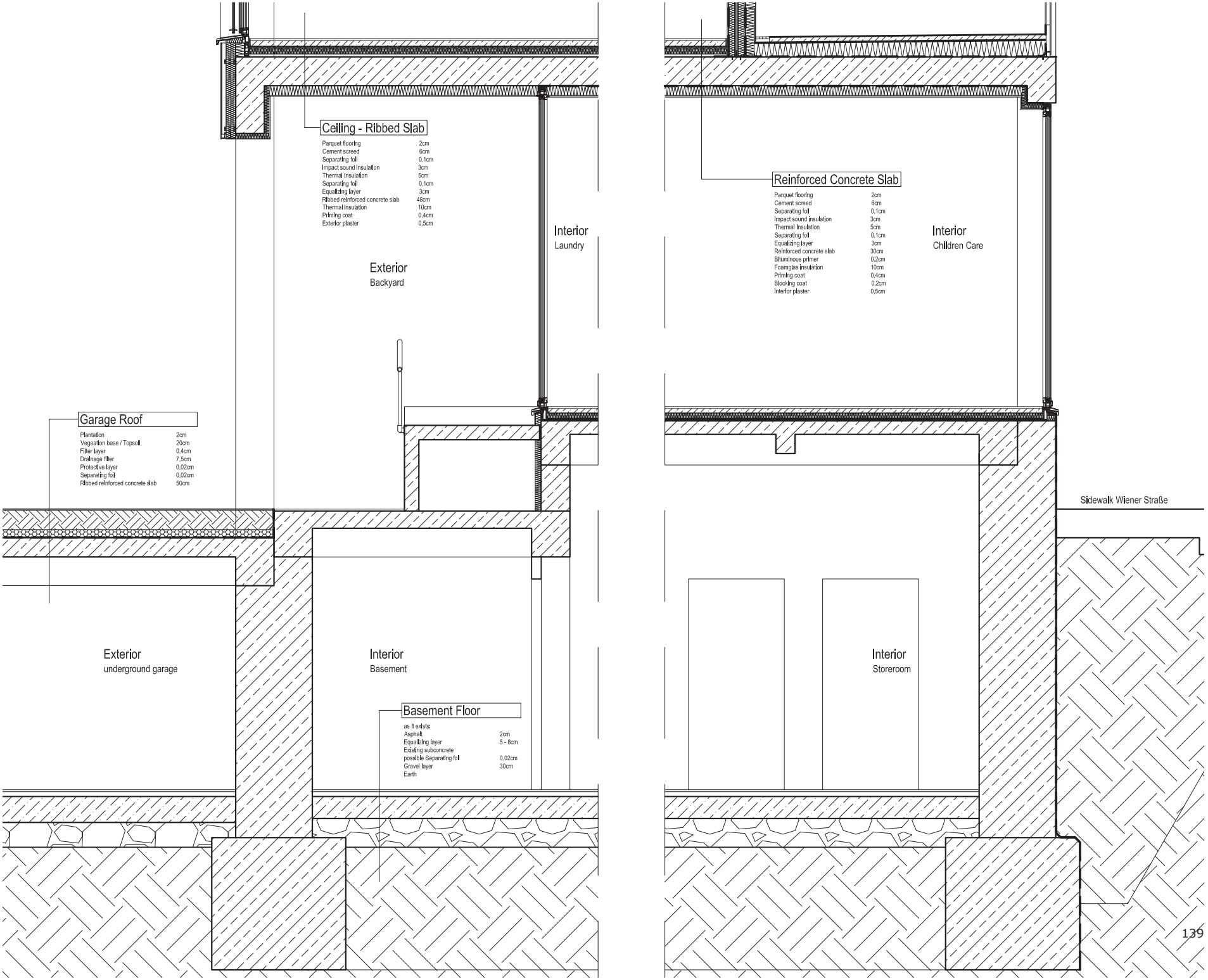

Ceiling - Ribbed Slab
Parquet flooring 2cm
Cement screed 6cm
Separating foil 0,1cm
Impact sound insulation 3cm
Thermal insulation 5cm
Separating foil 0,1cm
Equalizing layer 3cm
Ribbed reinforced concrete slab 48cm
Thermal insulation 10cm
Priming coat 0,4cm
Exterior plaster 0,5cm
Interior
Laundry
Exterior
Backyard
Garage Roof
Plantation 2cm
Vegeation base / Topsoil 20cm
Filter layer 0,4cm
Drainage filter 7,5cm
Protective layer 0,02cm
Separating foil 0,02cm
Ribbed reinforced concrete slab 50cm
Exterior
underground garage
Interior
Basement
Basement Floor
as it exists:
Asphalt 2cm
Equalizing layer 5 - 8cm
Exisiting subconcrete
possible Separating foil 0,02cm
Gravel layer 30cm
Earth
Reinforced Concrete Slab
Parquet flooring 2cm
Cement screed 6cm
Separating foil 0,1cm
Impact sound insulation 3cm
Thermal Insulation 5cm
Separating foil 0,1cm
Equalizing layer 3cm
Reinforced concrete slab 30cm
Bituminous primer 0,2cm
Foamglas insulation 10cm
Priming coat 0,4cm
Blocking coat 0,2cm
Interior plaster 0,5cm
Interior
Children Care
Interior
Storeroom
Sidewalk Wiener Straße

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Table of Figures